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A SANITARY SURVEY OF PALESTINE

Report of the experts submitted to the
Joint Palestine Survey Commission.

Boston, Massachusetts
October 1, 1928

PART III.

A SANITARY SURVEY OF PALESTINE

BY

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1927.

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PREFACE.

This report is based upon a sanitary survey of Palestine during the summer of 1927. During the six weeks (June-July) which we spent in the Land of the Book, we visited and studied the hygienic conditions of all the cities and towns and most of the colonies and rural districts from Dan to Beersheba. We saw personally all the hospitals and clinics and investigated the diseases that prevail, the facilities for treatment and the methods of prevention. Our report contains special studies upon typhoid fever and other diseases that were present in epidemic form; also upon diseases of the eye and conservation of vision; upon the problem of insanity and mental hygiene; and upon venereal diseases. We took account of the topography, climate, diet and racial habits as they affect health. We traced water supplies and the disposal of sewage, watched the collection and handling of wastes where this is done, and considered the abatement of nuisances. We followed the milk supplies from the farm to the consumer. We studied the problems of medical education and nursing training. We made a special study also upon the reduction of infant mortality and the promotion of child welfare. We looked into government and local health organizations particularly, and saw for ourselves how they work under different conditions in different parts of the land. We took into account the economic and social factors that bear upon health and disease, and we studied the vital statistics of the population as far as such figures are available. The problems of immigration and colonization as they affect the health and well-being of our people were given special attention. The list of subjects that pressed upon us is comprehensive, as will be seen from a glance at the table of contents of this report.

While this report is based upon a study of the hygienic and sanitary conditions of Palestine in general, our interest focused itself upon the health and well-being of the Jewish people, for whom health work is done by a variety of agencies. We therefore investigated and report upon the following:—

Government Department of Health.
Hadassah Medical Organization.
Kupat Cholim.
Shaare Zedek.
Bikur Cholim.

Ezrath Nachim Asylum.
Misgab Ladach Hospital.
Mission Hospitals in Jerusalem and other places.
Malaria Research Unit, subsidized in part by the Joint Distribution Committee.

To this must be added the work of the Department of Hygiene of the Hebrew University and research activities of the Vaad Habriuth.

In order to know conditions at first hand, we visited and made a study of the health administration and the sanitary conditions in the following cities, towns and colonies:—

Jerusalem	Athlit	Transjordania
Tel Aviv	Jericho	Sha Arani
Jaffa	Metullah	Richon-le-Zion
Haifa	Afule	Kfar Ivre
Acre	Nahalal	Kalandia
Safed	Balfouria	Kfar Giladi
Tiberias	Ain Herod	Aeyelet
Hebron	Nazareth	Yessod Hamaalah
Bethlehem	Rosh Pinah	Nachlit Jacob Harbaj
Nablus	Petach Tikvah	Tel Josef
Moza	Rehoboth	Manor
Nahlit Yahuda	Ramallah	Merchavia
Mishmar Hayarden	Mahuagin	Bnei Brak
Achva	Gaza	Zichron Jacob
Beersheba	Benjamino	Halhul
Hedera	Jedda	

The purpose of a sanitary survey is to observe, study and pass judgment upon existing functions, programs and organizations. With this as a background, the next step is to propose improvements. To be privileged to study the health services of a community is a responsibility. When the field of study is Palestine, the opportunity is indeed a great trust.

ACKNOWLEDGMENTS.

We found cordial cooperation and a willing desire to help us in our task by Government officials and by those in charge of philanthropic activities. We are indebted for much valuable information, as well as for opportunities to study the work of the various agencies, to the following, with whom we spent many pleasant and profitable hours:—

Colonel Heron,	Director of the Department of Health of Palestine.
Dr. Harkness,	Senior Medical Officer of the Department of Health of Palestine.
Dr. McQueen,	Jerusalem District Officer of Health.
Dr. Rankine,	Jaffa District Officer of Health.
Dr. Lightbody,	Haifa District Officer of Health.
Dr. Schapiro,	In charge of Malaria Research Unit.
Dr. Oplatko,	Health Officer of Tel Aviv.
Mr. Cantor,	Sanitary Engineer, Department of Health of Palestine.
Dr. Brachjahu,	Director of School Hygiene, Department of Health of Palestine.
Dr. Bluestone,	Director of the Hadassah Medical Organization.
Dr. Greenfelder,	In charge of the Department of Pediatrics, Hadassah Medical Organization.
Dr. Felix,	Director of the Laboratory of the Hadassah Medical Organization.
Miss Landesman,	In charge of infant welfare and health centers.
Dr. Noack,	Director of the Kupat Cholim.
Mr. Perlson,	Secretary of the Kupat Cholim.
Dr. Kligler,	Professor of Hygiene, Hebrew University.
Dr. Katznelson,	Secretary of the Vaad Habriuth.
Dr. Peller,	Statistician of the Vaad Habriuth, Hadassah and Kupat Cholim.
Dr. Wollack,	Director of the Shaare-Zedek and Bikur Cholim Hospitals.
Dr. Herman,	Director of the Ezrath Nachim.
Dr. Danziger,	Head of a private hospital and representative of the medical profession.

Rabbi Magnes,	Chancellor of the Hebrew University.
Dr. Stuart,	Assistant Director of Health, Laboratory Section, Department of Health of Palestine.
Dr. Yasky,	Chief of Ophthalmological Service, Hadassah Medical Organization.
Dr. Rattner,	Sanitary Officer of the Vaad Hadar Hacarmel and the Vaad Habriuth.
Dr. Rosenthal,	Chief of the Neurological Service, Hadassah Medical Organization.
Dr. Adler,	In charge of the Section of Parasitology, Institute of Microbiology, Hebrew University.

We are indebted to Colonel Kisch of the Zionist Executive for much general information and kindly consideration.

Many of the above gave much of their time to piloting us about and explaining situations. Special acknowledgment is given to those who in addition prepared statements for our use. Dr. Stuart gave us a detailed and excellent analysis of many of the communicable infections that prevail in Palestine; Mr. Cantor, a memorandum, blue prints and other illustrations of the engineering work; Dr. Schapiro, the same for the malarial activities; and Dr. Kligler put in our hands an unpublished manuscript covering his studies of some of the subjects of this report. Dr. Harkness prepared for us from official sources much useful information. Dr. Katznelson and Dr. Peller of the Vaad Habriuth also prepared comprehensive and useful reports of their activities.

We wish especially to acknowledge our indebtedness to Dr. E. M. Bluestone, Director of the Hadassah, for the many courtesies shown us while in Palestine. Dr. Bluestone put at our disposal extensive manuscripts containing useful information and also gave much of his time in showing us the medical work of his Organization in all parts of the country.

Much of our task was lightened and made the pleasanter by the generous help we received and for which we are correspondingly grateful. We desire to add our appreciation of the willing cooperation of many physicians and nurses whom we found working in the various hospitals and field clinics of the Hadassah, Kupat Cholim and other organizations, whose names do not appear, as well as to the heads of mission hospitals which it was our privilege to visit.

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CHAPTER 1.

FOOD AND DIET.*

The diet of the people of Palestine varies with racial and religious customs, with economic strata, with place, season and other circumstances. In the urban and suburban centers, it is as a rule mixed and adequate. Here the people live mainly on rice and mutton, grapes, figs, oranges, melons when ripe, and vegetables in season, the most common being cucumbers, vegetable marrow, tomatoes, egg plant, and beans. The better circumstanced have mutton, veal, fowl and meat of other food animals. There is abundant food in the sea, which is available to all who are within reach of the coast or near inland waters. Cow's milk and goat's milk are used as part of the diet almost everywhere. Eggs are available for those who can afford them. Fat is obtained in the form of clarified butter fat, olive oil and mutton fat.

In the rural districts, and especially among the Arabs, the diet is much poorer and the adequacy varies with the season. When vegetables are abundant they are eaten in large quantities. Durah bread, a variety of maize, and leben, a kefir or fermented milk, constitute the chief articles for many. When milk is in season, the leben is preserved by drying and in seasons of scarcity it is redissolved in water. In the sections in question the food is prepared by primitive methods and eaten by hand.

In the Jewish settlements food conditions are better, but also variable. The individual settlers prepare their food according to tradition or notion and largely in accordance with the country of origin. Here, too, the kind and quality of the diet varies with the seasonal abundance. The storage and preservation of foodstuffs are not yet practiced to any appreciable extent in Palestine. Large refrigerating capacity is needed, where foods may be held over from the seasons of abundance to the seasons of scarcity. During our inspection in most of the rural colonies, the quantity and the quality of food served from the communal kitchens was good. Of course the problem of a balanced diet in the modern sense is not well understood and education along these lines would serve a good purpose.

* The report as submitted contained one chapter on Climate, and one on Industry. These have not been included herein as they appear elsewhere.

Milk.

Milk is a common article of diet used by all races and classes throughout Palestine. Cheese and other milk products are also popular and valuable foods. That the promised land would flow with milk and honey seems almost to be realized, but the quality of the milk used is far from satisfactory. The milk business is not yet organized and pasteurization is not practiced. The first pasteurizing plant in all the land was being installed just as we left. The methods of collecting, distributing and handling are in some places primitive and in most places unsatisfactory. The sanitary control is inadequate. Very little ice is used to cool the milk. Through long experience the people have learned to boil the milk used for household use, and this is said to be a universal practice although it was not possible to confirm this statement repeated by many. It is probably correct in the main for the reason that it is a common practice, learned by experience in all warm countries; otherwise, the milk will not keep in the absence of ice. It is very likely that some of the typhoid and dysentery and diarrheal diseases, as well as all the Malta fever, are milk-borne.

There is nothing special or peculiar about the milk question in Palestine: it is universal in all countries where milk is used, for it is one of the most essential and useful of our standard articles of diet; in fact, the United States is quite in advance of all other countries in insisting that milk must be kept clean and cold and be bottled promptly. Even England and the more advanced countries on the Continent do not have the same control of the milk supplies, nor do they insist upon pasteurization as is required in so many places in the United States.

The general milk supply of Palestine comes from farms and farming colonies; a considerable amount of goat's milk is used. In our journeys through the farming colonies, we found some typical sources of milk supply. The following furnishes an example:—

Kalandria, a little colony of approximately twenty families, a few miles out of Jerusalem, is one of the sources of milk supply for the latter city. Fifty cows comprise the herd.

In a number of colonies we found fairly clean conditions in the barns and some interest in the health of the cattle, but as a general rule, judged by our standards, we would call the conditions poor. While it appears from the following report that the Department of Health conducts examination of milk for evidence of bacteria and to determine adulteration, we could find no evidence of any organized or systematic milk inspection service.

Milk Analyses In Jerusalem and Districts—1925.

By

The Laboratory of the Department of Health.

District	*No. of Samples*	*No. of Prosecutions*
Jerusalem		
Hospital Supplies	424	15
Street Venders	284	109

District	*No. of Samples*	*No. of Prosecutions*
Jaffa	1061	43
Ramleh	254	9
Gaza	607	
Tulkarem	361	
Haifa	338	13
Acre	231	7
Nablus	118	6
Tiberias	87	10
Hebron	225	
Total	3990	212

Control of Foodshops and Unhealthy Trades.

Under Turkish law, a municipality had certain duties in regard to the control of public establishments. In the early days of the British Administration, the Department of Health drafted a by-law which was adopted by all municipal councils, specifying the trades and industries requiring regulation from a health point of view, and laying down a procedure of control based upon licenses issued by the municipality. Under this by-law no person can engage in any of the specified trades without a license. The license is issued subject to the compliance by the licensee of conditions which are laid down by the Medical Officer of the Health Department. These conditions affect (a) the premises, construction and sanitation; and (b) the conduct of the trade and nature of materials used therein.

The procedure was a new one, and advance has been made gradually in order to avoid complaints that the conditions enforced are so severe as to place a handicap upon industry.

The policy followed is to require old established businesses to carry out some definite improvements each year. New trades have to comply as far as possible with the complete conditions for the industry. The municipal councils supply inspectors for the work and the part-time service of a Medical Officer of the Department is devoted to this branch in each town.

Licenses are renewed each year. Applications are forwarded by the municipal council to the local office of the Department of Health. The Medical Officer inspects and lays down conditions. On completion of conditions affecting the premises and equipment, reinspection is made along with one of the inspectors. The license is drawn up by the inspector, endorsed by the Medical Officer, and passed to the Municipal Revenue Office, which issues the license and collects the appropriate license fee.

Periodical inspections are made during the year and defaults found are the subject of a warning notice, requiring compliance within a specified time. Failure to comply means prosecution before the municipal bench or closure by order of the district commissioner until the matters at fault have been put right.

Criticism of the present scheme is that it is applicable only in municipal areas or in places where a local council exists.

A trade affecting public health which is without the municipal boundaries is legally not under control. These premises are, however, inspected and conditions are laid down. Prosecutions, however, are only possible in those cases where a public nuisance is being used.

The Department of Health has for some years been pressing for the enactment of a comprehensive ordinance which will give powers to regulate all establishments within or without municipal boundaries. The draft ordinance is now under consideration by the Colonial Office.

Another difficulty is the administrative one of compelling municipal bodies to provide an adequate number of inspectors for the work required. In Jerusalem, for instance, two inspectors have to carry out the control of some 2,500 to 3,000 industries which involves inspections and all the attendant clerical work of the preparation of licenses, and the prosecution of cases sent to court. In Jaffa, there is one elderly pensioner as inspector, and in Tel Aviv one inspector, whose dismissal is now proposed by the Council as a measure of economy.

The Government now proposes the stricter financial control of municipal revenues and expenditures, and it is anticipated that this important branch of the work will be more adequately staffed in the near future.

CHAPTER 2.

WATER SUPPLIES OF PALESTINE.

Water is one of Palestine's chief problems. Water is one of the essentials of health, comfort and cleanliness. It is therefore given special consideration in this report.

Parts of Palestine have too much water and are low-lying, swampy and malarious. For the most part the country is high and mountainous, dry and arid. The rainy season is short, from December to March, when an average of 26 inches of rain falls, while the remaining eight months of the year are dry. Even during the wet winter months the rains are uncertain and the amount may fall far short of the average. As a result of such shortage, the streams soon dry up, the ground water level is low, the springs run short or fail, and suffering, difficulty and disease follow in the train. This is the story of the past few years (see Climate). In the winter of 1924-1925, only 12 inches of rain fell, and the following year only 21.5 inches. That this is not new, one may readily infer from the great value placed upon a spring as a source of water in biblical times.

Despite the long dry season and the shortage of water almost everywhere in Palestine, there is actually enough water in the country to supply all the needs of health and agriculture. The problem is one of storage and distribution. This is an economic question which is having a start in the Rutenberg scheme, and we believe in time will be solved and the needs of all parts of the land adequately met.

The rocky hills, denuded and impervious, with the exception of usual faults and fissures in limestone strata, cause the water sheds to discharge the water rapidly into the wadies with no period of retention for the intervening dry seasons. The scarcity of perennial streams is evident with the exception of the area adjacent to Lake Tiberias, the Jordan and the Auja Rivers.

At the time of our visit and inspection, Jerusalem and Jaffa were short of water; Tel Aviv had an ample supply; Haifa, a serious shortage; Acre, a plentiful supply from the ancient springs of Kabra. In fact, the springs near Acre are noted and the water of one of them, which is bottled and sold throughout Palestine under the name of Spinny, has an established reputation.

Most of the cities and colonies in the coastal plain and the Valley of Esdraelon, as well as the Jordan valley, have only to dig or bore a hole in the ground to reach a water supply. Many of the colonies in the low-lying plain areas obtain a sufficient amount of water of a good quality from the underground water-bearing stratum. Even cities as large as Tel Aviv derive their water supplies from this source.

The main natural sources of surface water are the Jordan River, Lake Tiberias, Lake Huleli, tributary streams of the Jordan valley, the Auja River, Namein River, Nahr Rubin and several smaller perennial streams along the coast line.

The Judean hills are arid and rocky in the mountain sections, and conservation of the rain supply in natural reservoirs is difficult owing to the geological formation. It can, however, be done, as was demonstrated years ago in the Pools of Solomon.

The fissured limestone is a source of spring flow at various points. It is a well known axiom in the domain of the hygiene and sanitation of water supplies that springs and underground waters in such a limestone region are always of questionable hygienic value, because of the likelihood of invisible, distant and unsuspected sources of pollution. However, on account of the sparsity of population, there are a number of splendid springs in Palestine. For the most part, the plains depend on wells and the hills on springs or rain water cisterns.

There is a Sanitary Engineering Section of the Department of Health of Palestine presided over by Mr. Louis Cantor,* who is now making a sanitary survey of all the water supplies of Palestine. Most of the localities have been well studied and are efficiently administered as far as the limitations of the supply permit. Water analyses are done in the laboratory of the Health Department in Jerusalem, both chemcial and bacteriological, under the direction of Dr. Stuart, Chief of the Government Laboratory.

In general, the water supplies everywhere are fairly well controlled. Chlorination is generally used in the form of bleaching powder. Automatic liquid chlorine installations are not justified, owing to the temporary character of the town supplies. The opinion seems to be that mechanical filtration in time will prove a satisfactory method of purifying permanent municipal water supplies. Useful cooperation exists between the Public Health Works Department, the Department of Health, the Geological Advisor, the Sanitary Engineering section and the numerous municipalities who help each other in order to insure the purification of the water supplies. There is a carefully prepared plan of improvement for almost every community needing better or more water throughout the land. It only awaits the necessary funds to put the plans in operation.

---

* We are especially indebted to Mr. Louis Cantor, Sanitary Engineer, Department of Health, Government of Palestine, for many of the facts and figures contained in this part of the report. Mr. Cantor spent hours and days with us in showing the sources of water supply, in making sanitary surveys of water catchment areas, in pointing out faults and demonstrating plans of improvement. It is therefore a pleasure to acknowledge our indebtedness to him and to commend the admirable work which he is carrying on with industry, efficiency and intelligence.

Furthermore, colonies and villages have access to a grant of 400£E to aid in improving their water supplies. This is a loan by the Government, which is approved if certain conditions are met. Some Jewish colonies have taken advantage of this privilege, but most of them look after themselves in their own way and from resources other than Government money.

Under each city a separate discussion of the water supply is given. Following is a condensed abstract of the water supplies of most of the cities and towns in Palestine that interest us.

Cities and Towns.

Jerusalem.

Several improvements have been made since the war in the water supply of Jerusalem, which comes from springs, pools, rain water cisterns and surface sources. The water is of fair quality, but insufficient in quantity. (For full details concerning the water supply, see "Jerusalem".)

Tel Aviv.

The Tel Aviv supply is provided from five deep bores, with a new service reservoir added to the original storage. Mechanical defects of the bores were corrected after recommendation of the Department of Health.

Hebron.

Hebron town supply was increased and improved after careful examination of the springs and aqueduct. The ancient water works viaduct and reservoir were utilized.

Tiberias.

At Tiberias a town installation of water supply is operating with an electric pump station from a short inlet into Lake Tiberias to hill reservoirs. Town standpipes are provided for the public.

Jaffa.

The water supply, which is plentiful, is from numerous bores and shallow and deep wells. There are practically no rain water cisterns.

The composition and quality of the water varies greatly according to the exact locality and type of well. The water derived from some of the bores is bacteriologically pure and its chemical constituents render it suitable for domestic use. There are two new pump stations, municipal establishments, of 60 meters cube per hour capacity, to reservoir 200 m.c. capacity, bore 30 m. deep. According to the analyses, this water is up to stated requirements.

Haifa.

The water supply is insufficient. Rain water cisterns exist in many

places, but the bulk of the water is from wells. The well water is generally brackish and hard and probably has a corrosive action on steel. The shallow wells and many of the deeper wells are subject to pollution.

There is a pipe supply at Hadar Hacarnel from Technicum well, and at Bert Galin from deep bores to a tank reservoir.

Acre.

The supply is brought by aqueduct from the springs at Kabri. There is a plentiful supply (except when the aqueduct is under repair, a fairly frequent happening) and the water is of good quality.

The following is its chemical composition:

	Parts per 100,000
Chlorine	2.6
Equivalent as chlorides (60% Cl.) ...	4.3
Calcium (Ca)	7.7
Magnesium (Mg)	2.4
Hardness (by soap)	
Total	26.0
Permanent	14.6
Temporary	11.4

In the sample it is indicated that the permanent hardness as shown by the soap test is higher than that actually due to soluble and magnesium salts.

Magdal.

Town well and well in orange garden east of town. These wells are similar to those at Gaza in construction and in the character of their water.

Bores sunk opposite Magdal east of the railway line reached water of good quality but in small amount.

Esdud.

The railway bore near the station is about 30 meters deep and gives a plentiful supply of water which has the chemical character of the Gaza water.

Yebnah.

Village well. Quality fair, yield not very great.

Rehoboth.

The large bores in the orange gardens west of the railway produce waters of low salinity and moderate hardness. No analysis has been made by the Government Analyst, but as the yield is good the area is one which might be considered for further investigation.

Lydda.

This is the best water bearing area in Palestine. Numerous bores exist for the orange gardens, etc., but in certain places, e.g., at Beit Shumen, the water contains sulphuretted hydrogen in small quantities.

The railway supply (well No. 7) gave the following results:

Silica	0.62	parts per 100,000
Calcium Carbonate ...	20.00	" " "
Calcium Sulphate ...	3.07	" " "
Calcium Chloride ...	0.27	" " "
Magnesium Carbonate ...	1.83	" " "
Magnesium Chloride ...	5.27	" " "
Sodium Chloride ...	6.72	" " "
Total Solids at 180°C. ...	37.80	
Hardness		
(a) Total	22.60	
(b) Permanent ...	10.40	
(c) Temporary ...	12.20	

The advantages of Lydda for industrial concerns, which require good railway and road communications, are obvious.

Ramleh.

Ramleh is on the eastern edge of the Lydda water-bearing area. The yield of the bores is not quite so good as at Lydda, the water tends to be rather harder, and in several wells contains sulphuretted hydrogen.

Wilhelma.

There is a bore here but the conditions are not so good as at Lydda.

Ras El Ain.

The springs, which are the source of the Auja River, give an unlimited supply. The Government Analyst has not examined the water. The area is at present malarious.

Kalkilieh.

The village wells are poor, but there is a good bore in the orange garden near the railway line, worked by an oil engine. The yield is plentiful and the quality of the water is similar to that given by the Lydda bores.

Kakun.

The well in the orange garden east of the railway 5 kilometers north of Tulkarem has a large yield and the water is of good quality. There are no other good supplies on the railway north of this one.

Shuneh (Haifa District).

Although there is an unlimited supply, the spring water is of poor quality on account of its hardness.

The analytical results are as follows:—

	Upper Spring.	*Lower Spring.*
Chlorine	16.8	14.00
Calcium	8.8	14.41
Magnesium	4.11	5.25
SO_4	3.42	8.16
CO_3	17.95	19.58
Total solids at 180°C.	56.40	62.20
Hardness (a) Total	40.00	56.00
(b) Permanent	11.00	22.00
(c) Temporary	29.00	34.00
Probable Combinations		
Calcium carbonate	22.00	32.63
Calcium sulphate	——	4.62
Magnesium carbonate	6.68	——
Magnesium sulphate	4.28	6.14
Magnesium chloride	5.16	15.67
Sodium chloride	21.37	3.85
Total	59.49	62.91

On the Tel Aviv, Artuf railway there are no suitable supplies except those already mentoned at Lydda and Ramleh and the Tel Aviv supplies. The Artuf water is small in amount and excessively hard.

Gaza.

Jemakia Well, which is the town supply, the station well and a number of wells in the orange gardens north of Gaza Town. These wells are all in a good water-bearing area. They are 30 to 40 meters deep, according to their location, the water horizon being only a few meters above sea level. They are mostly operated by oil engines.

The salinity in each case is fairly low for Palestine water, and the hardness is between 20 and 25 parts per 100,000.

An analysis of the station well in January, 1923, gave the following results:

	Estimation.
Calcium Oxide ...	8.01 parts per 100,000
Magnesia	7.38 " " "
Silica	0.50 " " "
Chlorine	10.60 " " "
SO_3	2.06 " " "
Hardness	
(a) Total	24.00 " " "
(b) Permanent ...	11.50 " " "
(c) Temporary ...	12.50 " " "

Probable Combinations.

Calcium Carbonate ...	13.22
Calcium Sulphate ...	1.51
Magnesium Carbonate ...	7.95
Magnesium Cloride ...	8.84
Magnesium Sulphate ...	1.98
Sodium Chloride ...	9.29
Total Solids at 180°C. ...	42.00

Between Gaza and Majdal there are no good supplies.

Gaza municipal wells were improved and the pumping capacity increased from 17 to 65 meters cube per hour.

Beersheba.

A new well has been provided at Beersheba.

VILLAGES, COLONIES AND NEW SETTLEMENTS.

Village water supplies in general at the hilly districts are obtained from springs which are being improved and protected at sources.

Measures are being taken to provide reservoirs and tap installations for village distribution.

At plain areas shallow wells and bores are available with manual or animal lift to surface basins.

Villages not in possession of well or springs, collect rain water in large pools for use in watering cattle.

Cistern collectors are resorted to in all parts of the country.

In most of the *colonies and new settlements,* water supply conditions are fairly satisfactory. Wells, pumping stations, reservoirs and pipe distribution are the usual installations.

CHAPTER 3.

SEWAGE DISPOSAL IN TOWNS OF PALESTINE.

Palestine is in the stage of privy sanitation. From the standpoint of the prevention of disease, the proper disposal of the wastes from the human body is of first importance. The unsatisfactory and primitive methods that have been in vogue for centuries are still in use in most parts of Palestine. The country is passing through those stages of imperfect sanitation in which all pioneering and developing countries find themselves during the transitional period. In fact, it is not generally recognized how very recently the problem of prompt and proper disposal of sewage has been solved by sanitary engineers and adopted by civilized communities. The United States passed through this same stage not so many years ago—Philadelphia and Baltimore only recently abolished open drains and completed a satisfactory sewerage system. Furthermore, in many parts of our fair country, especially in the rural sections, will be found similar primitive and unsatisfactory conditions that now exist in parts of Palestine.

The completing of sewers and sewage disposal plants is expensive and requires engineering skill. The problem is an economic one and will advance as fast as means will allow. The cities of Palestine are now being surveyed and studied and plans are being prepared in the office of the Sanitary Engineer of the Health Department for modern sewerage systems. All such plans must first be approved by Mr. Watson, consulting expert in England.

While all intelligent persons in Palestine prefer sewers to privies and appreciate the importance to health of the prompt and proper disposal of human wastes, there is still prejudice and indifference to combat among a certain illiterate portion of the population who do not understand the vital significance of this subject in the domain of preventive medicine. For example, at a conference of health officers which one of us attended in Jerusalem, we pointed out that the Arab town of Halhul, with a population of about 2,000, did not have a single privy. The inhabitants defecate on the streets, in corners or anywhere, and the health officer of that district said that he relied

upon the purifying action of sunshine and dryness and health of the climate. He further stated that he would rather have no privies than poor ones, although it was explained to him that even a poor privy is the first step towards a good privy. This little incident is related principally to show that there is the prejudice of centuries to consider, and even though satisfactory arrangements are provided, they must be used by the people. We have this same problem in our southern states with reference to the prevention of hookworm disease.

Part of the northern district, outside of the city walls of Jerusalem, is supplied with an adequate sewerage system and a disposal plant in the valley of Kidron. At our inspection, we found this sewage disposal plant overloaded, too small, and the sewage too concentrated for satisfactory purification by the method used. The effluent from this plant is used to irrigate the fields in the valley below. It is also recognized that the location is rather close to a growing residential district of the best sort. It is proper at once, however, to state that these conditions are known by the authorities in charge, who designed and placed the disposal plant in its present location as a temporary device. The complete plans provide for carrying the sewage of Jerusalem down the Kidron valley well into the valley of Jehosophat, where the final disposal plant is to be placed.

No town is yet provided with a complete water-borne sewage system. Progress in this direction is of course dependent upon the availability of funds for capital expenditure and upon the provision of constant and adequate water supplies.

Except for ancient masonry drains square in section and in bad repair existing in the oldest parts of some of these historical towns, no sewers were to be found when the administration of the country was taken over from the Turks after the Great War. Since that date control of new buildings in town areas has been instituted by the Town Planning Ordinance of 1921. New buildings were required to be provided with sanitary conveniences and kitchen sinks and disposal arrangements by non-leaking cesspits or by septic tanks and percolating pits where ground conditions were suitable for percolation. Model building by-laws were drawn up by the Central Town Planning Commission for adoption by municipalities and a plumbing code was published in the three official languages under the authority of rules made by the Central Town Planning Commission, which required new buildings to conform to the requirements of the health authority.

Considerable progress has been made in regard to new buildings and those on which repairs or alterations are proposed; for old premises, the new work is regulated by the rules governing new buildings.

The rapid development of the main towns—Jerusalem, Jaffa, Tel Aviv and Haifa—is handicapped by lack of sewerage systems, and in 1926 the Government appointed a consulting engineer to investigate and report upon the main drainage schemes for these towns. The recommendations and report of the consulting engineer were promised in July of this year, but they were not ready at the time of writing this report.

The following is a brief and condensed statement of the sewerage situation and drainage situation of the towns which we surveyed in Palestine. For fuller information, see the account under each town.

Cities and Towns.

Jerusalem.

The town for purposes of this report may be divided into three sections:—

(a) *The old city within the ancient walls.*—An ancient sewerage system exists with an outfall at the Dung Gate which runs into the valley of Silwan. Of the internal reticulation of the sewers, little is known. They are of large rough masonry, with flat inverts carrying storm water and house sewage, and are in various stages of disrepair. Street openings are untrapped and the same applies to house connections, with the exception of public establishments, such as hotels, which have renovated sanitary installations. The sewers there ventilate into the streets or into courtyards and in some cases into houses.

The outfall at the Dung Gate adjacent to the Temple area is a continuation of a main drain in the Tyropoean valley. A short distance from the walls, the masonry sewer has been destroyed and the sewage runs down the hillside in an open channel. It dissipates itself in the agricultural and garden area on the hillside. Under storm conditions it reaches the valley of Silwan.

There are no disposal works in connection with this sewer. Regulations exist prohibiting the use of this sewage for truck gardening. However, at the time of our inspection the truck gardens irrigated with this raw sewage were growing lettuce and radishes, and other vegetables usually eaten in their raw state.

(b) *Outside the Walls, Southwest and West Area.*—No sewers exist. Buildings are for the most part supplied with non-leaking cesspits or septic tanks and percolating pits.

(c) *Northern District, Outside the City Walls.*—The Zionist Commission in 1919 spent 10,000£E in providing this area with a main sewer and branches conveying sewage to a disposal plant in the Wady Joz. House connections are trapped and the system is on modern lines. In the older section of this area, such as Measharim, latrines are flushed by hand owing to the water shortage. In the newer developed portions, complete sanitation with flushing tanks is provided. At certain sections of the main sewers flush tanks are installed, but their use has been limited by water shortage. The sewer is also used for disposal of cesspit contents of houses near this area not connected directly to the system. The sewage from the system as it reaches the disposal works, owing to water shortage, is of a highly concentrated nature. The complete purification of the effluent on this account has presented a problem of some difficulty. The existing works are temporary in character, and extension in the present site is not proposed. The complete drainage scheme for the town envisages the removal of this plant and the construction of main disposal works in the Valley

of Jehoshaphat. A scheme is in preparation for the better disposal of the effluent from the works by land irrigation.

Jaffa.

No sewer system exists except in the old city at the harbor area where drains are of the same ancient type as those in Jerusalem. These drains discharge on the shore. The nuisance on the shore front has been alleviated by extending the outfalls into the sea. The other part of Jaffa town is largely supplied with leaking cesspits for which ground conditions are suitable. New buildings are supplied with septic tanks and percolating pits.

A survey of the town has been prepared for the main drainage scheme, and the Municipality is now in a position to call for tenders for the preparation of the scheme, subject to the consulting engineer's report and the provision of the necessary funds.

Tel Aviv.

No general sewerage system exists, but this town is provided with an adequate water supply from five bores. Sewage disposal is mostly by means of septic tanks and percolating pits in the case of new buildings, and leaking cesspits in the case of older buildings. The township has prepared plans and details of a complete drainage scheme for the town. The commencement of the work is subject to the provision of funds and the report of the consulting engineer upon the scheme as a whole.

With its adequate water supply, Tel Aviv is ready for a water-borne sewerage system on modern lines, and the very existence of this water supply makes the provision of a drainage system an early necessity.

Haifa.

No main piped water supply exists, except at Hadar Hacarmel area (approximately 260 houses) which is provided from a bore at the Haifa Technicum.

The Municipality has prepared a general scheme of drainage for the town and in certain areas improvements are being effected by grading and providing inverts to sewers of ancient type, where these fit in with the general scheme and by laying new stoneware sewers in others. The complete scheme will not be undertaken until the report of the consulting engineer has been received. The scheme is also dependant upon the final decision regarding the harbor development and the provision of a main water supply. A large part of the town still depends upon cesspits and septic tanks.

Nablus.

Ample water supply exists, but has not yet been developed as a system. Plans are in hand for the water supply and a provisional scheme of drainage has been outlined.

The town has the usual ancient sewers discharging into a garden area west of the town where the effluent is used for irrigation. No purification works have yet been constructed. The ancient sewers are thus well flushed and the effluent which reaches the valley is well diluted.

Tiberias.

The main water supply is completed. A preliminary study of the drainage scheme has been prepared by the Sanitary Engineer. The present conditions are: in the old city, leaking cesspits; in the new, septic tanks and percolating pits.

Safed.

The old section of the town is served by an ancient sewer of the usual type. The outfall has been improved by the construction of a septic tank and percolating pits. Outfalls of several other short sewers have been led into percolating pits to eliminate nuisance caused by discharge of effluents on the surface of the hillside.

Improvements to the existing water supply have been made, but the quantity is not sufficient for a main supply or the development of a water-borne sewer system.

Hebron.

The town has old sewers. At the present time, the effluent discharges into a standing pool. Steps are being taken to improve the water supply and drainage conveniently, and a survey of the town is now in hand for the purpose of preparing a complete scheme.

CHAPTER 4.

DISPOSAL OF GARBAGE AND RUBBISH.

Nuisances and Cleanliness.

Palestine still has a long way to go before it can be given a clean bill of health. Palestine needs a good housecleaning as part of its program towards health and decency. Long experience has taught the lesson that cleanliness offers a protection against disease; that clean surroundings are apt to be free of infection; and that clean food is apt to be safe food. The City Beautiful is not only tidy in its parks, boulevards and palaces, but has given equal attention to tenements and slums, wharves and markets, cellars and attics, vermin and pests, and gives heed to the prevention as well as the abatement of nuisances. Long ago Moses emphasized the importance of cleanliness, which is still the heart and soul of sanitation.

We are inclined to place cleanliness even before godliness, for cleanliness of body, cleanliness of mind and soul, and cleanliness of our surroundings are essential to a full appreciation of the spiritual virtues. Our conception of cleanliness has greatly changed with our knowledge of the kinds of dirt, the degrees of dirtiness, and the nature of these dangers. We can no longer be satisfied with physical or aesthetic cleanliness, but must insist upon biological cleanliness.

It is difficult to keep clean without an abundant supply of water, and this is one of the handicaps from which many places in Palestine suffer. It is also a problem of community organization, education and economics.

The methods used in the collection of garbage and rubbish and the abatement of nuisances in some of the towns and colonies follow.

Cities and Towns.

Jerusalem.

The removal of garbage, rubbish and trash is under the direction of a sanitary surveyor, Mr. Clayton, who is an English employe of the Municipality. In the old walled city of Jerusalem, garbage and rubbish are scraped together and picked up by hand and placed in

bags on donkeys and thence removed to the incinerator, which is just outside the wall on the side of the Kidron Valley. It requires 30 donkeys, 20 mules and 4 trucks to collect and transport the 800 tons of garbage and rubbish that are daily collected. In the narrow streets of the walled city no other method is applicable. There is not sufficient water to flush the streets. Dry sweeping with brooms is in vogue and adds to the dust. The dryness during the summer season and the intense sunshine are the salvation of the situation. While the method is primitive, it is a great improvement over the Turkish administration, which largely let the stuff accumulate.

Other Cities.

There are municipal sanitary surveyors also at Tel Aviv, Jaffa and Haifa. These surveyors correspond to our sanitary inspectors. They are appointed and paid by the cities upon the recommendation of the Government. Their general duties consist in the collection and disposal of garbage and rubbish, the cleaning of streets, the abating of nuisances, the prevention of mosquito breeding, the care and construction of sewers and drains, the installation of plumbing, sanitation of houses, etc. It is hoped to extend the system to other towns and places.

Colonies and Villages.

Practically all the colonies and smaller places lack an efficient system of scavenging. This is one of the needs of community housecleaning. The work should be in the hands of sanitary inspectors, who are trained in the problems of preventing and abating nuisances. Such work includes the abolition of fly-breeding, mosquito multiplication and rat propagation. It is well worth the time and energy spent, for organic cleanliness has a direct and indirect bearing upon health.

Dust.

Palestine suffers from the dust nuisance common to all places that have long, dry, hot, windy seasons. The dust is more than a nuisance, for it is irritating and a menace to health. Most of the dust comes from traffic on the roads and much of it will be controlled with road improvement, and especially the use of oiled surfaces.

Flies.

All travelers to the East are impressed with the great abundance of flies. They breed in manure, organic waste and filth of various sorts. This is a problem of cleanliness and is closely associated with the proper disposal of manure, garbage and refuse. The flies propagate to enormous numbers on account of the prolonged hot season. Flies convey infection and are probably responsible for some of the typhoid, dysentery and intestinal diarrheas, as well as for the transmission of eye disease. The sandfly conveys both pappataci fever and leishmaniasis, which are discussed more in detail in other parts of this report.

CHAPTER 5.

HOUSE SANITATION AND PLUMBING.

The types of houses in Palestine vary from the tents of the nomad Bedouins and the huts of the village Arabs to the modern home. Some of the better and newer houses in Palestine are as nice, clean and satisfactory as similar dwellings in the United States or in England. Such, however, are rather the exception, because for the most part the housing conditions are primitive, elemental and unsanitary. Most of the houses are crowded, with poor ventilation, especially those of the Arabs both in cities and villages. Here fuel, fodder, food and cooking, animals and human beings, young and old, are crowded together in one small, tight enclosure.

It is a curious fact that the plumbing regulations have been translated verbatim from England to Palestine. They should be modified and adapted to the climate and conditions of the country. Furthermore, the English plumbing regulations are conservative and expensive. The tendency in the United States is to simplify the requirements without in any way sacrificing safety.

Modern house sanitation, plumbing and drainage were not utilized to any extent in Palestine previous to the Great War. Isolated cases in foreign consulates and institutions of English, French and German origin had certain sanitary fittings. Local practice, even in the better class of native houses, had primitive installations. Water was brought in a pail dipped from the yard cistern or well. Kitchen sinks, where used, were in usual cases cut out of a stone slab or of tiles, but not provided with taps or trapped waste outlet. Water was discharged into a pail under the slab and was poured into the yard or into the streets as convenient. Bath tubs and showers were luxuries in the best of houses, as the water problem prevented the full use even if such fixtures were available. Latrines of the oriental or squatting type were usually a hole in the floor untrapped to a cesspit or existing street drains which may be classified as elongated cesspits. European homes had the elementary requirements of a small sink of cast iron enamelled, or made of tiles or slabs, draining into a soak pit untrapped, swarming with vermin. Yard privies were common in the settlements of an insanitary type. Native villages had no arrangement for sanitation, being of a most primitive character. Conditions

in the old city quarters of Jerusalem, Jaffa, Haifa, Hebron and Safed with primitive drains of square stone slabs, not jointed, were in reality a type of elongated cesspits. The odors emanating from the untrapped storm water entry openings can be understood.

Under the vigorous policy of the Department of Health, although conditions exist as aforesaid in the old buildings, a distinct improvement has been made during the past five years in introducing modern sanitation. Public establishments, such as hospitals, hotels, schools and institutions, have been the first to be modified with proper sanitation.

Model sanitary regulations, issued in English, Arabic and Hebrew for house sanitation, plumbing and drainage, are now being adopted by local town planning committees and enforced in the larger towns, such as Jerusalem, Jaffa, Tel Aviv, Haifa and Tiberias, for all new building operations. Nablus, Hebron, Safed, Acre, Beersheba, Gaza, Jenin and Tulkarem are beginning to install sanitary fittings under pressure of the Health Department. Settlements are being provided with sanitary installations.

Difficulty was had in obtaining the installation in a proper workmanlike manner, as no plumbers were available. Tinsmiths, locksmiths and blacksmiths undertook the work, with faulty results as can be appreciated.

Models and standard drawings depicting the type of fixtures, methods of installations and disposal systems were prepared by the Department of Health. Regulations in detail were issued stating the requirements based on English practice, viz., separation of the sullage from the soil wastes with external pipe lines before connection to the drainage line by means of gully traps. Ventilation lines, anti-syphonage details and fresh air inlets, etc. are provided as necessary.

Classes of instruction were arranged in various towns and lectures given by the Sanitary Engineer to the architects, engineers and plumbers, explaining the Department of Health regulations. Dealers in sanitary supplies were advised as to types of material necessary for the trade. Plumbing courses were provided in Tel Aviv and examinations held the past two years. Thirty-five applicants are now qualified to practice as plumbers and sixty men are classified as assistant plumbers.

Tel Aviv is specially stressed as the various districts of the town area were built up from a community of 5,000 to 40,000 inhabitants in five years. With the exception of the barrack sections, the new areas of the town are provided with modern equipment. A campaign is now proposed to control these barracks and to provide sanitary installations in accordance with Department of Health requirements.

Jerusalem, Jaffa, Tel Aviv and Haifa have building plans reviewed and work inspected by sanitary inspectors of the Sanitary Surveyors Sections, or by Medical Officers of Health, where municipalities are not yet organized.

Defective material of various types, washout W.C.'s, faulty traps, "bell" and "D" types, rain water pipe for soil lines, etc. were foisted into the country, but are now being eliminated. Fittings are gradually

improving with the knowledge of the plumbing trade and education of the public.

At a Health Week Exhibition in Jerusalem in November, 1924, a special display of modern house sanitation was made. Considerable interest has been awakened by a good sanitary show at the Palestine Near East Exhibition at Tel Aviv.

Fixtures of a better pattern and material, lead wiped joints, standard cast iron soil pipe with lead caulked joints, and drum traps for bath wastes are some of the improvements that are being installed. Hot water supplies with varied types of heaters are now in demand. Sanitary fittings of every description are slowly being introduced.

Representative plumbing supply stores having a full line of fixtures, fittings, etc., with proper advertisement basis, will assist greatly in the progress. Drainage fittings of the proper type are obtained with difficulty owing to the adherence to obsolete continental types. The great contrast in prices between English and the continental goods have given the latter a monopoly of sanitary supplies.

With the proposed development of water supply and sewerage systems in the towns, the improvement of sanitary conditions in the new settlements, and the educational system of school hygiene, it is assured that a good market for sanitary goods will be available.

The criterion for sales in the local market for the present, it is true, is price and not quality, but a better grade of goods is required for the public establishments of the first class hotels, hospitals, schools, institutions and homes now proposed. Cultivating the field by judicious advertisement for the appreciation of quality in addition to price is worthy of consideration, and such efforts will be duly rewarded.

CHAPTER 6.

VITAL STATISTICS.

The vital statistics of a community serve as an index of its public health service and is of great aid in arriving at a conclusion of the need of additional necessary measures in any given country. In Palestine only a beginning is claimed. The English took a census in 1922 and there has been no count since, despite considerable movement in and out, to and fro. The Bedouins, of whom there are many thousands in Palestine, have never been counted and are omitted from the census and also from all statistics of births, deaths, marriages and disease. The figures for the Arabs are often quite uncertain because the notification of disease is incomplete and diagnosis often inaccurate, which make the figures and rates unsatisfactory. The figures given for the Jews and Christians are a fair approximation.

Despite the short-comings, there are figures that give a reasonably correct picture of the amount and spread of malaria, typhoid fever and other diseases, and of excessive infant mortality. The infant mortality rates cannot be regarded as accurate, owing to incomplete reporting of births. Nevertheless, they are so very high that it is clear that they have a significance which is confirmed by personal observations during our survey.

Population.

The latest available population statistics are as follows:

TABLE I.

		By Creeds.	
		Jews	158,000
Settled in towns and villages	783,161	Moslems ...	633,000
Nomadic	103,839	Christians ...	87,726
		Others ...	8,274
Total	887,000		887,000

Mortality.

Deaths by Age and Religion.

The following table concerning deaths in Palestine in the year 1925 is divided by age and religion. The calculations are made upon

the settled figures of population in the towns and villages, it being impossible to get any statistics from nomadic Tribes.

TABLE II.

MORTALITY	*Christians*	*Moslems*	*Jews*	*Various*	*Total*	*Percentage*
Under 1 mo.	100	1,411	214	11	1,736	8.85
1 mo. to 1 yr.	351	4,245	311	50	4,957	25.27
1 yr. to 2 yrs.	233	3,007	241	55	3,536	18.03
2 yrs. to 5 yrs.	127	2,148	138	40	2,453	12.50
5 yrs. to 10 yrs.	27	517	49	10	603	3.07
10 yrs. to 20 yrs.	64	646	39	17	766	3.90
20 yrs. to 50 yrs.	188	2,191	306	50	2,735	13.94
Above 50 yrs.	315	1,950	516	36	2,817	14.37
Unknown age	1	4	3		8	0.04
Total mortality	1,406	16,119	1,817	269	19,611	

TABLE III.

	Christians	*Moslems*	*Jews*	*Various*	*Total*
Deaths per thousand Inhabitants ...	18.80	31.24	15.07	32.51	27.27
Total number of births	2,777	28,211	4,000	491	35,479
Births per 1000	37.15	54.68	33.17	59.34	49.31
Infant mortality	451	5,656	525	61	6,693
Percentage per 1000 births	162.40	200.48	131.25	124.23	188.64

BIRTHS AND INFANT MORTALITY.

1925.

TABLE IV.

Births	35,471
Deaths	19,611
Excess of births over deaths	15,860

The following is the birth, infant and general mortality rate for 1923 to 1925:

TABLE V.

	Population	*Death Rate Per thousand*	*Birth Rate Per thousand*	*Infant Mortality Rates*
1923	662,013	25.67	47.43	184.76
1924	681,245	25.04	51.31	184.83
1925	719,508	27.55	49.31	188.64

Infant Mortality Rate for 1926 by Religion:

TABLE VI.

Jews	*Christians*	*Moslems*	*Others*
108.13	158.01	172.49	170.94

In 1925, births and deaths (Jewish).

TABLE VII.

Births	4,000
Deaths	1,817
Excess of births over deaths	2,183

Comparative Mortality of Palestine with Other Countries:

TABLE VIII.

	Deaths per thousand	*Infant Mortality*
United States	12	71.5*
Holland	12	66
Denmark	12	71
Sweden	14	66
Switzerland	14	80
England	14	80
Palestine	27 plus	188 plus

Births and Deaths by Religion in Cities and Towns.

1926.

TABLE IX.

	BIRTHS				*DEATHS*			
	Christians	*Moslems*	*Jews*	*Others*	*Christians*	*Moslems*	*Jews*	*Others*
Jerusalem	367	555	1,627	—	217	273	674	—
Jaffa	302	1,115	234	—	117	822	68	—
Tel Aviv	1	—	1,591	—	1	—	585	—
Gaza	31	1,222	2	—	13	484	1	—
Haifa	365	644	675	4	144	376	161	7
Nablus	17	862	—	10	8	449	—	5
Tiberias	19	155	218	—	9	81	63	2
Safed	11	286	155	10	7	176	68	1

Infantile Mortality Rates per 1000 births by Religions.

TABLE X.

	Christians	*Moslems*	*Jews*	*Others*
1921	138.14	159.10	126.56	——
1922	128.22	358.61	329.79	——
1923	304.84	199.30	125.76	256.00
1924	151.90	198.98	105.71	146.03
1925	162.40	200.48	131.25	124.23
1926	158.01	172.49	108.13	170.94

JEWISH IMMIGRATION.

Over 70,000 Jews have migrated to Palestine since the War. The following are the figures for the period 1923-1926:

*United States Registration Area.

TABLE XI.

1923	...	...	3,995
1924	...	...	10,819
1925	...	...	31,650
1926	...	...	5,716

This population is distributed in the urban communities and about 120 agricultural settlements.

Marriages and Divorces.

There is a statute for the reporting of marriages and divorces. It is being poorly complied with, one of the reasons being the fact that a nominal fee of ten piasters (50 cents) is charged for reporting of the same.

Some of the records may be found in the homes of the rabbis and ministers of other denominations, but it is impossible to obtain any data upon which to base any significance upon the marriages and divorces.

Summary.

The only census was taken by the English in 1922. Even this is incomplete, for the Bedouins who number thousands were not counted and are not included in any of the statistical figures of Palestine. Furthermore, reporting of disease is incomplete, the diagnosis often incorrect, many births are not recorded, and it is difficult to obtain any statistics on the distribution of sex and other factors. The health officer therefore labors under very great difficulty in endeavoring to compile facts and figures. While no pretension is made to accuracy, nevertheless, there is statistical evidence that is significant.

We made a special study of infant mortality because this is the most sensitive index we possess of social welfare. If babies were well born and well cared for, their mortality would be negligible. Furthermore, it is quite clear to students of preventive medicine and social welfare that immediate and successful results may be obtained in saving lives of many babies and children by well tried methods.

Conclusions.

Analysis of Table No. II reveals the fact that 6,693 babies died under one year of age, this comprising over one-third (34.12%) of all the deaths in Palestine in 1925.

A study of the same table shows that over 13,000 children died before the age of five years, this constituting about 64% of all deaths in Palestine in 1925. Over 11,000 of these deaths occurred among Moslem children. We have been taught to regard infant mortality as a fair index of a community's application of modern public health principles, and the appalling loss of young children in Palestine, suggests avoidable negligence. If we measure truly the value of human lives, and are conscious of the community's obligation to safeguard the health of the people, if the country is to progress, it must appear very

evident that a program of life-saving is the responsibility of the government. We cannot be passive when two out of every three deaths occur among children under five years of age.

Analysis of Table No. III shows the larger number of deaths among Moslems over Jews and Christians, with a death rate varying from 200.48 among the Moslem group to 131.25 in the Jewish group. The total infant mortality rate of 188.64 is staggering. Approximately one out of every five Moslem children born dies before one year of age. The ratio of the combined other groups is about one in seven.

The Moslem has a high birth rate, and the deaths are explained by overcrowding, poor sanitation, ignorance, and the extreme reluctance of the Moslem woman for male medical service.

Analysis of Table V shows no diminished infant mortality rate over all for three years.

Analysis of Table VI shows encouraging progress in a substantial degree, in the general infant mortality rate by all creeds, and the Jewish rate begins to appear respectable, and is a tribute to the organized infant welfare service of the Hadassah Medical Organization and the Plunkett Systems in Tel Aviv.

Analysis of Table VII gives an encouraging excess of births over deaths.

Table VIII gives a comparative picture of general and infant mortality of Palestine with six countries, where public health is regarded as a necessary essential program for community progress. The figures speak for themselves and require no superfluous words.

All of the countries mentioned in the table formerly had still higher mortality rates for years. They saw the light; sanitation was improved, communicable disease was controlled, infant welfare in a measure safeguarded, other health measures promoted, and the infant mortality rate consequently reduced.

Table IX draws a picture of births and deaths by religion for the larger cities and towns of Palestine.

Table X is a six year chart of infant mortality by religion. 1926 offers an encouraging suggestion of improvement with reasonable hope that the infant welfare work carried on by voluntary agencies, and the Government's increasing participation in this work which may be expected, in view of the fact that they are subsidizing one or two of the clinics already, may cause a reduction in the near future in the figures.

Table XI calls attention to the Jewish Immigration which has created public health problems. During 1924 and 1925 over 40,000 Jewish people came to Palestine. This created much overcrowding with consequent spread of disease. Immigration has been restricted as evidenced by the fact that 5716 people, less than one-sixth of the number of the previous year, came to Palestine in 1926. It is planned to handle the immigration problem more wisely, so that the country may not only assimilate the people, but develop and anticipate a healthy background for future immigrants.

CHAPTER 7.

THE DISEASES OF PALESTINE.

Wherever we went we visited the hospitals and clinics and took cognizance of the diseases that prevailed. We consulted with the doctors in private practice as well as the health officers concerning this problem. In addition to this we obtained from official sources available figures concerning the important diseases of Palestine. From a wealth of material at our disposal, we give the following facts which we believe are both of interest and importance for the purposes of this report.

Typhoid Fever, Dysentery and Diarrheal Diseases.

The control of typhoid fever, dysentery and infectious diarrheas is the pressing sanitary problem of Palestine. Despite the fact that these diseases are readily preventable, they have been unduly prevalent throughout the land, indeed rose to the magnitude of serious epidemics during the past few years, especially among the Jewish colonies in the Emek, and also at Tel Aviv, Jerusalem and many other places. The distribution was quite unequal.

The reason for these outbreaks is quite clear to the sanitarian. The tinder was gathered, the fires lit, and the conflagration was bound to come. Typhoid fever and other intestinal infections are always a scourge in pioneering regions with unsanitary conditions. We found Palestine in just this stage of development.

Our studies of the situation convinced us that very little, if any, of the typhoid fever in Palestine was water-borne, for the water supplies, inadequate as they are in most places, are controlled or chlorinated. Furthermore, very little of the infection was spread through milk, for the reason that most of the milk is boiled before it is consumed. The disease, then, was spread largely through contacts and carriers and in the many miscellaneous ways in which this filth disease flourishes. The long hot summer season with the abundance of flies adds to the menace. The insanitary disposal of sewage causes a concentration of contagium. Added to this, we found a general lack of understanding or appreciation concerning the disease and its mode of transmission, so that the unhygienic customs of the people courted rather than prevented the fever. Furthermore, thousands of fresh susceptible immigrants arrived in Palestine during the years in question, and these people added fuel to the flames. This is the story of

typhoid fever in all countries during the developing stage. The United States passed through the same experience.

It grieves the heart of the sanitarian to see fever-ridden communities, unnecessarily stricken, for we know that typhoid fever, even under these conditions, is preventable.

In contrasting the typhoid and malarial situations, we found the weight to balance sadly against the former. An intelligent and energetic attack on the malaria problem had controlled this disease and was keeping it well in check. Furthermore, the people well understand its mode of spread and its methods of prevention. On the other hand, we found indifference and ignorance concerning typhoid and dysentery, and the need of a similar campaign of education with municipal housecleaning was clearly indicated. We believe that there should be a united and cooperative drive against typhoid fever, dysentery and infectious diarrheas, which is sure to bring rewardful results.

Everywhere we went we found the hospitals clogged with typhoid fever and dysentery, and the demand everywhere was for more beds for persons who needed medical and surgical attention. In many places there were not even enough beds to look after the typhoid cases. We were told that this has been the situation during the summertime for several years past. We believe that well directed preventive measures will cure this situation. In other words, the modern attitude is to keep people out of the hospital by preventing typhoid and dysentery. We would need fewer fever hospitals and isolation wards, if the emphasis were placed upon prevention.

The typhoid epidemic was studied by the Department of Health and a report made, dated July 19, 1926, by Dr. J. W. P. Harkness, Dr. A. Rankine, Dr. H. F. Khalidi, Dr. A. Felix and Dr. V. Mandelberg. This admirable report concludes with the recommendation that questions of general sanitation be put first, with the provision of ample water supplies, for they state: "The death rates from all causes decrease coincidently with sanitary progress and habits of cleanliness are instinctively engendered in a population whose towns are provided with good drainage and plentiful water."

Professor I. J. Kligler, of the Department of Hygiene, Hebrew University, made a special study of the epidemiology of typhoid fever, and his admirable report is in our files. He emphasizes the importance of early detection and isolation of cases and the vaccination of all contacts; also the vaccination of every immigrant, particularly those between the ages of five and twenty-nine years.

Dr. S. Peller, Epidemiologist of the Vaad Habriuth, made a report November 1, 1926, of the Tel Aviv situation during the summer of that year, which gives admirably in full detail the features of this unusual outbreak.

It is estimated that in 1926, which was the high tide of the typhoid epidemic, there were all told in Palestine about 1,500 cases. Of these, 180 occurred in the Emek; Ain Herod had 100; 170 were treated in the Government Hospital at Haifa. During this same year, 594 cases were treated in the various Hadassah hospitals throughout the land, as follows: 349 at Jaffa and Tel Aviv; 109 in Jerusalem; 83 in Haifa;

53 in Safed. In other words, the Hadassah hospitals cared for more than one-third of all the cases which occurred during the epidemic last summer.

The incomplete notification in the past has made it impossible to compile accurate statistics, but there is noted improvement in the direction of notification.

A notable outbreak occurred in Tel Aviv, approximately 500 cases, in 1925, which stretched into January on account of the large amount of immigration; and there was a second outbreak in 1926. Here the disease found easy prey on account of overcrowding in primitive houses and barracks and because of the increased immigration and building operations not keeping pace with the population influx. Statistics point out that about 80 per cent of the cases in Tel Aviv were among recent immigrants huddled together in the temporary barracks and huts described in another part of this report.

Prophylactic Inoculations.

In Afule, 70 per cent of the population received two injections of the typhoid prophylactic; in Jerusalem 88 per cent received one injection; in the entire Emek, 81 per cent had one injection and about 64 per cent had two injections between June and August, 1926. These were mostly too late to influence the epidemic except in Afule, where four doctors conducted the campaign with energy and it had in consequence an incidence of only 4 per cent. A total of 4,365 persons were inoculated once at least, and about two-thirds of them twice in the Emek alone, of a total of about 5,000 inhabitants.

The following statistical facts are of special interest and are made part of this report. The original reports and a great mass of tabular studies upon the typhoid epidemics are on file and may be consulted by those interested.

COMPARISON OF TYPHOID MORBIDITY IN JEWISH AND NON-JEWISH POPULATIONS
JERUSALEM, 1924-1926.

	Population[1]	*Cases*	*Deaths*	*Morbidity per 1000*	*Mortality per 1000*
1924					
Jews	34,431	61[2]	6	1.6	0.17
Non-Jews	28,147	43	9	1.5	0.32
1925					
Jews	34,431	168	20	4.9	0.58
Non-Jews	28,147	150	16	5.3	0.57
1926					
Jews	34,431	171[3]	9	5.0	0.26
Non-Jews	28,147	127	15	4.5	0.53

[1]The population figures are taken from the 1922 census. The present population of Jerusalem is estimated by the Municipality to be 70,000, of which about 40,000 are Jews. Since accurate figures are not available and since we are concerned with only the comparative data, the crude census returns of 1922 are given.

[2]The figures used are taken from Table 10 of the Typhoid Com. Report. Those figures are somewhat at variance with those given in the Annual Report of the Department of Health.

[3]These data are taken from the records in the Bureau of Vital Statistics in the Department of Health.

INCIDENCE OF TYPHOID FEVER IN PALESTINE AND BY DISTRICTS AS LAID OUT BY THE GOVERNMENTAL PUBLIC HEALTH ORGANIZATION.

Year	*Palestine*	*Jaffa-Tel Aviv*	*Jerusalem*	*Haifa*	*Safed*
1921	368	128	151	45	6
1922	208	199	248	37	11
1923	202	135	119	54	25
1924	298	235	139	48	19
1925	705	398	457	200	79
1926 (partial)		119	116	64	38

CASES AND DEATH RATE OF TYPHOID FEVER IN PALESTINE BY YEARS.

	1921	*1922*	*1923*	*1924*	*1925*	*First 3 mos. of 1926*
Cases ...	368	208	202	199	707	200
Deaths ...	34	32	17	32	70	19
Percentage ...	9.23	15.38	8.41	10.70	9.90	9.0
Jewish Immigration		7,844	7,421	12,856	33,801	5,000

APPROXIMATE HOSPITAL BEDS PER THOUSAND POPULATION.

	Per 1000 of Population of Town	*Per 1000 Population of Town and District*
Jerusalem	10.5	Above 8
Tiberias	10.0	Approx. 4
Safed	6.0	" 2.3
Haifa	5.0	From 2.5—3.0
Jaffa-Tel Aviv ...	4.0	Approx. 3.5
Tel Aviv Township ...	3.0	
All other towns, including Gaza	3.4	0.8

APPROXIMATE HOSPITAL BEDS PER THOUSAND OF JEWISH POPULATION.

Private Hospitals in Jerusalem not Included.

	Per 1,000 Population of Town	*Per 1,000 Population of Town and District*
Jerusalem	6.76	6.6
Jaffa-Tel Aviv	2.8	2.3
Haifa	4.3	—
Ain Herod	—	—
Safed	16.9	—
Tiberias	4.0	6.1

Dysentery.

The story of dysentery is a counterpart of that of typhoid fever.

These two diseases have similar modes of transmission and similar means of prevention.

There are two chief forms of dysentery, amebic and bacillary. During the course of our visits to hospitals, we found that most of the cases of dysentery were diagnosed as amebic, although it seemed to us that the prevailing form of the disease was of the bacillary type. A campaign to control typhoid fever would at the same time control dysentery and other infectious diarrheas.

Cholera In Palestine.

The last epidemic of cholera in Palestine occurred in Tiberias in 1918. There were about 60 deaths. The disease was believed to be water-borne, due to infection of the Sea of Galilee. According to the old custom, water was taken from the sea all along the beach in water jugs (zir). The water front is shallow and polluted with surface wash, direct defilement, bathing, fishing boats, etc. The whole shore-line of the city was fenced with wire netting, leaving five stations from which water could be taken under sanitary supervision. As the carrier left the station, a sanitary inspector placed bleaching powder in the zir.

During the period 1920-1926 no case of cholera has occurred. The potential danger of its introduction lies in the return from Mecca of the annual Moslem Pilgrimage.

The pilgrims from Palestine are protected by anti-cholera vaccine prepared by the Health Department's Central Laboratories.

The immunity so far enjoyed is felt to be in large measure due to the vaccinal prophylaxis enjoined on all prospective pilgrims, and experience here corroborates part of the opinion recently expressed by the second subcommittee on cholera epidemiology (Anon. Bull. Mensuel, Office International d'Hygiene Publique, Paris, Vol. 18, August, 1926, pp. 878-881): "Anti-cholera vaccination is considered today the most efficacious method of preventing the spread of the disease; while anti-cholera vaccination, which protects for a period of six months, is the method of choice in fighting epidemics. Its use in a systematic way permits the arrest of a commencing epidemic or the extinguishing of an epidemic focus at its onset."

On the other hand, the real and enduring way to control cholera is by clean water, fly suppression, protection of food supplies, control of carriers and other measures of personal hygiene and municipal sanitation applicable for the prevention of typhoid fever. A well organized community need not fear cholera, and Palestine could readily make herself cholera-proof.

Malaria.

The malarial problem in Palestine has been handled efficiently and effectively. Time and money were first spent in having a careful study of the situation made by skilled experts. As a result, much time and money were saved in the end, for the information obtained permitted concentrated efforts upon the particular mosquitoes responsible for the transmission of the infection in Palestine, and their special breeding

places. This is a very good illustration of intelligent and useful public health administration with an economic expenditure of time, money and energy. The good results in many places will be abiding, for the breeding places of the responsible mosquitoes have been well nigh abolished. On the other hand, the warning is given that malaria again will overrun Palestine if the work is not continued and extended. We were especially impressed with the good results obtained by the educational propaganda, which is such a useful instrument of control. We found everywhere we went throughout the land that the people generally had a clear understanding of the disease, its mode of transmission and the best means of prevention.

How long malaria has existed in the Holy Land is problematical, although very likely it was brought from neighboring countries very many years ago. The disease was certainly there 40 years ago with blackwater fever, for there is record that it then affected the first Jewish colonists.

The worst places for the infection have always been the coastal plain, the Valley of Esdraelon and the whole Jordan Valley.

The only serious malarial foci left are the Hule district, where control is not economically practicable at present because it requires extensive and expensive drainage operations; and the Jordan Valley, where the disease is not yet controlled. Otherwise, it is disappearing, although still evident and requiring active supervision and watching. Thus, during our inspection in the summer of 1927, there was an epidemic of malaria at Hedera and also at Afule. Work in progress should soon control both these foci.

Of the three principal kinds of malaria, there is very little quartan fever. It occurs, although comparatively seldom seen. The benign tertian is very common and estivoautumnal is frequent and prevails especially in the late summer and fall.

The Story of the Malarial Campaign.

The admirable work done by a number of sanitarians and several commissions who have studied the malaria question deserves commendation. Even before the War, Dr. Joffe and Dr. Briin, Palestinian physicians, were engaged in antimalarial work, and Dr. Muhlens studied malaria in Palestine about 1905.

Following the War, the Hadassah Medical Organization, with Dr. Schapiro as Chief Sanitary Officer, did work in minor control, education and quinine prophylaxis. In 1921, Doctors Kligler and Weitzman made an interesting study of malaria control in Kinnereth region and in Migdal. The Malaria Survey Section, fostered by the International Health Board and attached to the Palestine Health Department, started work in June, 1922. The personnel consisted of Dr. Carley and Mr. Mildaesis, engineer. They worked until 1925, and carried out several malarial surveys, but little work to control the disease was accomplished at this time.

The Malaria Research Unit attached by the Joint Distribution Committee to the Palestine Health Department in September, 1922,

was designed for research and practical control work in all the Jewish settlements and neighboring villages. It continues to function to date.

In 1926, Mr. Carter, engineer, was sent by the International Health Board to the Health Department of Palestine and was actively at work on the problem at the time of our visit.

The League of Nations Malaria Commission visited Palestine in May, 1925. This Commission consisted of Dr. Darling, Professor Nocht, Dr. Ottolengo and Colonel James Swellengrebel. These men met with a sad end in having their lives snuffed out in an automobile accident while doing their work. Jewish medical and anti-malaria work has been made the subject of a memorandum submitted by the Health Council of the Zionist Executive to the Malaria Commission of the League of Nations, 1925.

Dr. J. M. Shapiro made a report and analysis of the malaria incidence and activities of the Malaria Research Unit during 1926. Similar reports were made by Dr. Kligler for 1924-1925. The 1925 report was abstracted in the Journal of Preventive Medicine, November, 1926.

The Malaria Survey Section Report is with the International Health Board, New York City.

The Report of the League of Nations Anti-Malaria Commission, 1925, is at the Head Office, Geneva, Switzerland.

The following reports also deserve mention as part of the bibliography:—

Joffe, H.: Contribution a l'etude du fievre hemoglobinurique.
Med. Section XIII, International Congress. Paris, 1900.
Joffe, H.: Campagne antipaludeenne en Galilee.
Rev. de Med. et de Hyg. Trop., 1914, No. 2.
Kligler, L. J.: Malaria Control Demonstrations.
Am. Jour. Trop. Med., 1924, IV, 139.
Kligler, I. J., Shapiro, N. M., and Weitzman, I.: Malaria in Rural Settlements of Palestine.
Jour. of Hyg., 1924, XXIII, 280.

The Malarial Mosquitoes.

There are four anopheles mosquitoes that act as effective vectors of the malarial parasite in Palestine:—*A. bifurcatus, A. elutus, A. sergenti,* and *A. superpictus.*

A. bifurcatus breeds especially in cisterns and is therefore responsible for much of the malaria that occurs in the cities. It does not breed in the open in Palestine, which is contrary to the habits of this mosquito in England.

A. elutus is like our *quadrimaculatus.* It is an active carrier, and breeds throughout the season from April to November, but not in the winter months. It prefers to lay its eggs in stagnant waters, in swampy places, and also in wells and pools.

A. sergenti is also an active carrier, and breeds from June or July to November, but is not active in the winter. It breeds in slow running water, such as irrigating canals.

A. superpictus is believed to carry the infection, although there is still some doubt concerning this mosquito. It breeds especially in streams and its season is from April to November.

At least two of the above four mosquitoes, namely *A. elutus* and *sergenti* carry both tertian and estivoautumnal infections.

Observations in Palestine have shown that the flight of the malarial mosquito is longer there than in the United States. It is believed to go two to three miles on the wing, whereas our malarial mosquitoes seldom travel over a mile. This difference may be due to the fact that the mosquito has trained itself to fly longer distances to find a suitable place to lay its eggs and also to find its food.

The Spleen Index.

All children attending Government Schools receive a general medical examination on entering the school, in the middle of their school career and before leaving school.

During these examinations, splenic enlargement is looked for as a routine practice.

The following extract from the "Instructions for the Medical Inspection of Schools and School Children" dated September 2, 1920, gives the procedure which is followed by all medical officers:

> "22. Examine by palpation only (not percussion). Record degree of enlargement as follows:—No enlargement = 0. Slight enlargement, i. e., lower pole just palpable on inspiration to one finger's breadth below costal border = 1. Moderate enlargement, i. e., lower pole more than one finger's breadth below costal border but not reaching the level of the umbilicus = 2. Great enlargement, i. e., spleen extending to right of or below the umbilicus = 3."

The results are entered on the pupil's "School Medical Record Card" and consolidated returns are made to headquarters monthly.

The following tables give the figures of deaths from malaria, dispensary attendances, case incidence and spleen rates.

Malaria Deaths in Palestine.

For the whole of Palestine, the deaths from malaria of which the Department has records have been as follows:

1920	*1921*	*1922*	*1923*	*1924*	*1925*
526	94	67	78	33	13

So far as any reliance can be placed on such figures, they indicate a satisfactory diminution in the number of deaths from the disease. The figures for Jerusalem town are more reliable and are as follows:

1919	*1920*	*1921*	*1922*	*1923*	*1924*	*1925*
35	30	17	5	5	2	2*

*Due to malignant malaria contracted near Jericho; the patients, however died in Jerusalem.

Dispensary Attendances.

The percentage of patients suffering from malaria treated in the dispensaries of Palestine serves as a useful index figure to the relative amount of malaria in the whole country year by year, since there are more than fifty institutions scattered throughout the various towns, where such patients are treated.

The figures for the last four years are as follows:

Year	*Total No. of Patients*	*No. of Patients Suffering from Malaria*	*Percentage of Malaria Patients*
1922	283,156	20,297	7.2
1923	270,945	13,280	4.9
1924	285,215	11,732	4.1
1925	339,795	7,249	2.1

Spleen Rates.

In November, 1925, the medical officers of the Department carried out a spleen examination of more than 40,000 children. No such extensive spleen survey had been made previously, but the figures obtained will form a useful basis of comparison for future years.

Of 6,549 school children examined in the towns, 245 had slightly enlarged, 51 moderately enlarged, and 6 greatly enlarged spleens, giving a spleen rate of 4.6 per cent.

Beersheba and Nablus were the only towns where the spleen rate was nil. Beisan had the highest rate of any town, but the Beisan spleen rate has shown a remarkable annual decrease, thanks to the drainage of the swamps near the town. In 1922 the rate was 48 per cent; in 1923, 34 per cent; in 1924, 24 per cent; and in 1925, 16 per cent.

The Jerusalem records go back the furthest. In 1904-1905, Cropper (Journal of Hygiene, 1905) found rates of 36 per cent to 60 per cent in different schools; in 1912, Brunn (Zeitschrift fur Hygiene und Infektionskrankheiten, 1913) gave the rate as 59 per cent; in 1919, Yofe (Revue de Medecine et d'Hygiene Tropicale, 1920) found a rate of 44 per cent; early in 1922, the school medical record cards showed the rate to be 22 per cent; and in November, 1925, it was 0.8 per cent.

The following are Dr. Yofe's rates taken between December, 1918, and February, 1919, and the Government medical officers' rates taken in November, 1925, for certain other towns:—

Towns	*1918—1919*	*1925*
Jaffa	16.5%	4.9%
Hebron	37.0%	0.8%
Tiberias	44.3%	2.3%
Haifa	38.8%	5.6%
Safed	68.7%	10.0%

The following table gives the result for village children of the spleen survey carried out in November, 1925:

	No. of Children Examined	*No. of Enlarged Spleens**			*Percentage of Enlarged Spleens*
		1	*2*	*3*	
Under 1 year of age	5,807	321	61	13	6.8
One to 5 years ...	11,942	1,024	388	79	12.48
Over 5 years ...	15,936	1,340	634	185	13.54
	33,685	2,685	1,083	277	12

There are no previous figures with which to compare this table, but figures for many individual villages might be cited which show a progressive decrease in the spleen rate. Thus, for Beit Jibrin, where annual clearance of vegetation and canalization of the neighboring wadi has been practiced since 1920, the spleen rate of 1920 was 91 per cent, in 1922 it was 43.2 per cent, and it is now 19.3 per cent.

With regard to the Jewish rural population, Dr. Yofe on an examination of 2,806 persons in the winter of 1918-1919 found a rate of 50.7 per cent. In 1924, the Malaria Research Unit examined 5,486 persons and obtained a rate of 20.1 per cent.

Case Incidence.

The following are the figures of the Malaria Research Unit of the monthly case incidence of malaria in the Jewish settlements under its supervision.

	1922	*1923*	*1924*	*1925*
Average monthly population under observation ...	6,725	10,042	16,466	22,283
Average monthly number of cases of malaria ...	382	286	173	182
Average monthly malaria incidence	5.7%	2.9%	1.1%	0.8%

The following study by Dr. G. Stuart, Assistant Director of Health, Laboratory Section, gives the facts about total and relative incidence, monthly prevalence, etc. This note was prepared by Dr. Stuart especially for the purposes of this report.

During the years 1922, 1923 and 1924, for which full statistics are available, 90,872 blood films have been examined at the various laboratories established for economic and utilitarian reasons at Jerusalem, Jaffa, Haifa, Nablus, Tiberias and Safed.

While it must be recognized that the substance of this note is compiled from laboratory statistics only, it is nevertheless felt that the figures presented form a fairly reliable index of incidence—total, relative and seasonal—of the various forms of malaria encountered in Palestine.

*1. Slight enlargement—Palpable on inspiration to one finger breadth below costal margin.

2. Moderate enlargement—From one finger breadth below ribs but not reaching umbilicus.

3. Great enlargement—To right of or below umbilicus.

1. Total and Relative Incidence.

Of the 90,872 blood films examined, 13,741 have been reported positive. The following table shows the relative incidence.

Type of Malaria	*No. of Positive Findings*	*Relative Percentage*
Benign Tertian	9,478	69.98
Malignant Tertian	4,017	29.23
Quartan	246	1.79
Total Incidence	13,741	

2. *Total Monthly Incidence of Different Types of Malaria.*

Type of Malaria	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Benign Tertian..	581	757	847	879	822	971	987	1,150	742	622	573	457	9,478
Malignant Tertian.....	249	119	72	94	43	114	258	429	476	745	761	657	4,017
Quartan.....	26	45	23	31	6	8	50	22	8	10	5	12	246
Total incidence	856	921	942	1,004	871	1,093	1,295	1,601	1,226	1,377	1,339	1,216	1,374

These figures show that benign tertian malaria is most prevalent during the months of June, July and August, and that, graphically, the curve of incidence is highest in August.

Malignant tertian malaria is most common during October, November and December, and reaches a maximum in November.

From an occurrence of but 246 cases in three years, it is, of course, impossible to draw any accurate conclusions in regard to quartan malaria, except to emphasize its relative lack of importance as compared with the benign and tertian forms. This observation, arising from the fact that, in my seven years of experience in Palestine, the quartan form has never until 1924 reached a relative incidence of even 2 per cent, is wholly at variance with the published findings of Professor Muhlens.[1] This investigator, as a result of researches carried out here in 1912 and 1913, reported that the quartan parasite accounted for 20.10 per cent of all cases of malaria (2071) occurring during December 1912 and January 1913.

3. *Monthly Order of Incidence.*

The following statement clearly indicates the monthly occurrence of the two important types of malaria, arranged in descending order of incidence.

Month	No. of Positive Findings	Percentage of Total Positives	Month	No. of Positive Findings	Percentage of Total Positives
August	1150	12.13	November ..	761	18.94
July.....	987	10.41	October.....	745	18.54
June	971	10.25	December...	657	16.35
April.....	879	9.27	September ..	476	11.85
March.....	847	8.94	August	429	10.68
May	822	8.67	July.....	258	6.45
February ...	757	7.99	January	249	6.22
September ..	742	7.83	February ...	119	2.96
October.....	622	6.56	June	114	2.81
January	581	6.13	April.....	94	2.34
November ..	573	6.05	March.....	72	1.79
December...	547	5.77	May	43	1.67

[1]Bericht uber eine Malaria expedition nach Jerusalem.

4. *Incidence of Malaria in the Years* 1922, 1923, *and* 1924 *compared*:

(a) *Total and Relative.*

Year	Number of Positive Findings				Year
	Benign Tertian	Malignant Tertian	Quartan	Total	
1922	3,374	2,319	61	5,754	1922
1923	4,230	891	99	5,220	1923
1924	1,874	807	86	2,767	1924

(b) *Monthly.*

(1) Benign Tertian Malaria

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1922	157	192	239	213	226	281	351	543	303	319	281	269	3374
1923	292	423	439	545	469	515	397	412	283	162	149	144	4230
1924	132	142	169	121	127	175	239	195	156	141	143	134	1874

(2) Malignant Tertian Malaria

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1922	45	21	8	55	17	76	165	289	300	481	491	371	2319
1923	164	69	40	33	16	17	44	66	65	109	120	148	891
1924	40	29	24	6	10	21	49	74	111	155	150	138	807

(3) Quartan Malaria

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1922	5	14	8	4	2	4	4	4	1	7	2	6	61
1923	16	22	12	25	2	4	2	3	4	3	2	4	99
1924	5	9	3	2	2	0	44	14	3	0	1	2	86

5. *Conclusions.*

(a) Although the number of blood films examined in 1922, 1923 and 1924 has remained constant, viz., about 30,000 a year, the positive findings in 1924 show the total incidence of malaria to be very definitely decreased, amounting to but half that of each of the two previous years.

(b) An analysis of laboratory findings for three years would indicate the relative incidence of the three forms of malaria to be: benign tertian, 68.98 per cent; malignant tertian, 29.23 per cent; and quartan malaria, 1.79 per cent. While the benign tertian form of the disease is thus by far the most common, the quartan variety is so rarely encountered as to be practically of negligible importance.

(c) The curve of incidence in the case of malignant tertian malaria shows a very definite elevation in the later months of the year, reaching its highest point about November.

(d) While, during 1922 and 1923, marked elevations in the curve of incidence of benign tertian malaria occurred between mid-spring

and mid-autumn, it is also of interest to note that, with the exception of a slight rise in July, the curve of 1924 showed practically no seasonal variation whatever.

The Malarias, Relative Incidence in Palestine.

The following figures are from official sources:—

Incidence as Determined from 165,803 Laboratory Examinations.

Year	*No. of films examined*	*Benign T.*	*Malignant T.*	*Quartan M.*	*Total All forms*
1921	25,000	1,916	1,093	86	3,095
1922	30,000	3,374	2,319	61	5,754
1923	35,253	4,230	891	99	5,220
1924	25,619	1,874	807	56	2,737
1925	22,586	1,932	749	34	2,715
1926	27,345	2,406	1,664	154	4,224
6 Yrs.	165,803	15,732	7,523	490	23,745

Percentages of Relative Incidence.

Benign Tertian	66.25
Malignant Tertian	31.69
Quartan	2.06

Variations in Incidence throughout the Years—Percentage.

	1921	*1922*	*1923*	*1924*	*1925*	*1926*
Benign Tertian	61.9	58.6	81.	67.7	71.2	57.
Malignant Tertian	35.3	40.3	17.	29.3	27.6	39.4
Quartan ...	2.8	1.1	2.	2.	1.2	3.6

From an occurrence of but 490 cases in the six years under review, it is impossible to draw accurate conclusions in regard to quartan malaria, except to emphasize its relative lack of importance as compared with the benign and malignant tertian forms. This observation arising from the fact that during the past 6 years the quartan form has but twice exceeded the relative incidence of 2 per cent, and on both occasions such has been due to a localized outbreak, is quite at variance with the published findings of Professor Muhlens (already referred to above) who reported that the quartan parasite accounted for 20.10 per cent of all cases of malaria (2,071) occurring during December 1912 and January 1913, diagnosis being made by the thick drop method.

The diagnosis of the quartan form since 1923 has been carefully controlled in Palestine, as each film diagnosed positive must be forwarded to the Central Laboratories for corroboration.

Sanitary Activities.

It was decided that during the year 1926 the Malaria Research Unit should engage in sanitary work in the Jewish colonies on a larger

scale than before. This increased activity happened to coincide with the appearance of typhoid cases in Nachlat Yakov, a settlement about 16 kilometers east of Haifa, and in the settlements of the Valley of Esdraelon.

The sanitary conditions in the settlement Nachlat Yakov were most conducive to a rapid spread of the epidemic; the water supply and latrine conditions were highly unsatisfactory. A few typhoid carriers may have been left over from the typhoid epidemic that had occurred in the same colony during the fall of 1925. A special inspector was assigned to that place, and on a special grant of £E25 obtained from the Colonization Department of the Zionist Organization a few flyproof latrines were rapidly installed, the water supply was chlorinated and general cleanliness was paid especial attention. An examination of the stools of the suspected individuals revealed two typhoid carriers, who were isolated temporarily at the Government Hospital and later, in their homes, were given special supervision and instruction for the prevention of the spread of the disease. They collaborated with the S. M. O. and M. O. H., Haifa in giving to all the members of the community two doses of antityphoid vaccine. The first case in the colony appeared on May 1st, the last one on June 6th, there being ten cases in all.

During the epidemic in the Valley of Esdraelon, the Malaria Research Unit helped to establish sanitary latrines, to improve the methods of water supply and of garbage disposal, and to educate the people in prevention of the spread of disease. They also assisted the Government and local physicians in the work of inoculating the residents against typhoid.

The blood and stool examinations of known or suspected sick and of suspected carriers were carried out in the Government Laboratory attached to the Malaria Research Unit at that time.

At the same time instructions were issued to all the Malaria Unit, S S I to pay especial attention to the improvement of the sanitary conditions in the Jewish colonies, particularly with respect to water supply, latrine accommodations and to garbage disposal. In some of the districts, like Judea, this work was started in the summer, but in places where the S S I was burdened by the heavy unprecedented malaria control work, the active sanitary work was postponed until the winter. However, arrangements for an active sanitary campaign during the winter were not carried out by the Malaria Research Unit because at the end of 1926 the sanitary activities were fully taken over by the Government.

Cost of Control Work in 1926.

District	*Population*	*Cost in £E*	
		Total	*Per Capita*
Earon	7,196	288.325	0.039
Petach Tikva	10,440	498.435	0.048
Hedera	4,365	462.115	0.108
Zichron	4,530	703.725	0.158
Yajur	2,345	539.105	0.230

District	Population	Cost in £E Total	Per Capita
Afule	5,307	307.820	0.058
Ein Herod	3,397	584.015	0.172
Yavniel	1,712	326.350	0.190
Kinnereth	1,061	365.375	0.344
Rosh Pinah	3,400	252.585	0.074
Metulah	1,603	245.865	0.153
	45,356	4,573.665	0.101

Summary—Prophylaxis.

The methods used to control malaria have been based on sound principles, and while not novel in practice have been unique in many of their details. In some cases the swamps have been pumped, in others drained by ditching, and still others have been controlled by ingenious engineering expedients. Breeding places that cannot be abolished are sprayed, mainly with arsenic.

Quinine prophylaxis has been a failure here as it has been almost everywhere else, for it is expensive and results are not enduring. The disease reappears as soon as the quinine is stopped. Quinine does not prevent infection, although it does in many instances control the development of clinical symptoms by keeping down the number of parasites in the blood.

Effective screening against mosquitoes and also against flies was the exception throughout Palestine during our visit. While this is in part an economic problem, it is also a question of education, and we believe many cases of fever could be prevented by a better understanding and use of house and bed screens.

Trachoma and Other Diseases of the Eye In Palestine.

Everyone visiting Palestine and the countries of the Levant is impressed with the great amount of eye damage, which is so frequent as to be conspicuous. The horrible sight of babies with fly-pestered eyes attracts the attention of all tourists. Trachoma is prevalent and conjunctivitis and inflammation of the eyeball itself is due to infection which goes on to impairment of vision. All this is readily preventable and is due to a combination of ignorance, indifference, neglect, accentuated by the irritating glare of the sunshine, the prevalence of dust, the menace of flies, the danger of contagion, and the effects of heat. Therefore the largest number of cases of conjunctivitis and inflammation of the eyeball occur in the warm dry season, between June and November.

It is a common mistake to suppose that the damage to sight and injury to the eyes which one sees so frequently in all ages in these countries is due to trachoma. Trachoma in itself is not particularly a blinding disease, but predisposes to the bacteria that inflame the eye. It is ordinary ophthalmia due to bacterial infections, such as the Koch Weeks bacillus and pus cocci that result in opacities to the cornea

and injury to the eyeball itself. In view of the fact that inflammation of the eye is favored by the dirty crowded conditions, neglect and ignorance, it occurs mainly among the lower classes; the more favored portion of the population being as free from eye disease as we are in the United States.

Next to trachoma and ophthalmia, the diseases which deserve attention are cataract and glaucoma, which appear to be even less prevalent than in Europe, but have as everywhere else in the world, a higher incidence among Jews than other peoples. Squint is neglected and often results in impairment of vision. Syphilitic iritis is seldom seen and there is very little gonorrheal ophthalmia. On the other hand, eye complications of tuberculosis and rachitis occur.

Formerly, four beds were set aside for ophthalmia patients in all the Jewish hospitals in Palestine. At the time of our visit there were none. For serious cases, a bed may be available in one of the general medical wards, but then only in the acute stage. Most of the ophthalmic work of the Hadassah has been in the outpatient clinics which are well attended and sometimes overcrowded. There is need of additional dispensary service in the denser portions of the population.

The Ophthalmic Hospital of the Order of St. John is an admirable institution in Jerusalem, remodeled from an old Turkish house after war damage, and beautifully situated on the slope of the Valley of Hinon. The hospital is clean, well ordered and completely equipped. It has a capacity of 45 beds, which are always full; an outpatient clinic which sees an average of 600 patients a day. It charges no fee and the doors are open to all. The presiding genius of the institution is Dr. Streathern, assisted by an adequate staff with matron, British sisters, trained nurses and attendants. The following figures showing the number of cases treated and the proportion of Jews is instructive.

1926	*New Cases*		*Total Consultations*
	11,666	Moslems	58,115
	3,415	Christians	14,454
	3,046	Jews	15,314

Trachoma and the Work of the Hadassah.

The signal service rendered by the Hadassah organization in the prevention and care of trachoma cases is one of its outstanding achievements, and deserves commendable recognition. The drive against trachoma began in 1918 in Jerusalem and was started in 1924 in the colonies, where the school children are reached by local doctors and nurses. The ophthalmic service of the Hadassah is now under the able direction of Dr. Heim Yasky. Every school child throughout Palestine is now reached, and all those needing it receive prophylactic treatment daily. The good effects of this splendid service are shown by the fact that in 1918, when work was begun, 40.7 per cent of all school children had active trachoma, whereas in 1926, this was reduced to 10.4 per cent, as shown by the following figures

Year	*No. of Children*	*No. of Cases*	*Per cent.*
1918	8,395	3,420	40.7
1923	13,375	2,104	15.73
1925	16,053	1,933	11.7
1926	18,491	1,927	10.4

The following personnel is now engaged in anti-trachoma work in the city schools.

City	*Total No. Children*	*Ophthalmologist's Time*	*Full-Time Nurses*
Jerusalem ...	7,600	1/3	10
Tel Aviv ...	7,000	1/3	5
Haifa ...	2,000	1/4	2
Tiberias ...	900	1/3	2
Safad ...	750	—	1

The point is here made that while trachoma has been reduced, it has not been mastered. The reason for this is that the trachoma nest is in the family where the disease is contracted. In other words, children do not become infected in school but during the preschool age at home. It is therefore evident that the trachoma service needs to take into account the younger child and should have a home visiting service to attack the problem at its source and in its beginnings.

For better ophthalmic service, Palestine therefore needs more nurses with special training for family visiting; hospital beds for eye cases, about one to ten of general beds; and local dispensaries for the treatment of infectious eye diseases established for trachoma, acute conjunctivitis and ophthalmia.

The following account upon anti-trachoma work in Palestine, what has been done and what remains to be done, prepared especially for the purposes of this report by Dr. Yasky, gives the situation in detail.

Anti-Trachoma Work in Palestine.

What Has Been Done and What Remains to be Done.

Palestine is no better off than other Near Eastern countries from the point of view of trachoma, large numbers both of Jews and Arabs being infected. In the report of the Public Health Department of the Government of Palestine for 1921-1922, it was stated that "trachoma is by far the most important disease among school children. In some of the schools as many as 97 per cent of the children were infected, and 15 per cent of the children in the whole country suffered from defective vision."

In 1923, 10,480 children were examined in the Arab Government schools. Among them were found 4,840 cases (46.3 per cent) of active trachoma, and 1,657 cases of cured trachoma (15.7 per cent). The statistics of the Jewish schools before systematic treatment was begun show that there was no great difference between them and the Arab schools in this regard. Of 4,313 children examined by Dr. Ticho in the Jerusalem schools, 1,206 (27 per cent) were infected with trachoma. In 1913-1914, 9,329 children were examined in the Hebrew schools of

Palestine. There were 2,423 cases of active trachoma among them (26 per cent), and 188 cases of cured trachoma (only 2.7 per cent).

Sanitary conditions in the country during the war (bad enough before that) became worse than ever, and trachoma spread very largely among the Jewish population.

All medical work among Jews in Palestine was taken over during the summer of 1918 by the American Zionist Medical Unit, now known as the Hadassah Medical Organization. The ophthalmologist of the Hadassah, Dr. Krimsky, investigated the spread of trachoma in the Hebrew schools in town and country. Of 8,506 children examined by him, 3,465 (40.7 per cent) were found to be suffering from active trachoma, while there were 1,056 (12.4 per cent) of cured trachoma cases.

The ratio of difference of infected children as between the Hebrew and the Arab schools was not large at the time. Thus, the percentage of active trachoma in the Arab schools was 46.3 per cent, with a total of 62 per cent infected; while in the Hebrew schools, 40.7 per cent of the children suffered from active trachoma, with a total number affected of 53.1 per cent.

The systematic anti-trachoma campaign in the Hebrew schools dates from that time. The work was initiated in Jerusalem in 1918, in Jaffa-Tel Aviv in 1919, in Haifa in 1920, in Safed and Tiberias in 1921, and in the colonies in May, 1924.

In the cities the anti-trachoma work is carried on in the following manner:—The ophthalmologist in charge examines all the school children at the beginning of the school year, and then at the beginning of each semester. Children suffering from diseases of the eye are examined every month. Each child has its eye chart, whereon the date of examination, diagnosis and method of treatment are noted. Children affected with acute conjunctivitis, follicular trachoma, and all cases where there is a secretion are kept out of school and sent to the Hadassah clinic for treatment.

Experience has shown that the most important feature of the antitrachoma work is *daily treatment*. The treatment is administered by specially trained nurses in rooms set apart for the purpose in the schools. The nurses submit daily detailed reports of their work. All statistical material, such as reports of ophthalmologist on his examinations, monthly reports on number of treatments given, etc., are sent to the Hadassah headquarters for the attention of the Department of School Hygiene. On an average of 300 to 500 children (depending upon the number of trachoma cases in a given locality) are under the observation and treatment of one nurse.

Methods of treatment are both medical and surgical. Cases of follicular trachoma are treated in the clinic. In the rare cases where there are complications, operations are performed. The methods of treatment in the schools are of the simplest. Massage with cotton applicator moistened in a hydr. solution (1:2,000); massage with yellow ointment of Hg, 2 per cent; copper sulphate (crystal and solutions of 5, 10 and 20 per cent). Arg. nitr. 1 per cent or 2 per cent is used for cases with secretions.

The following personnel is engaged in the anti-trachoma work in the city schools:

City	*Total No. Children*	*Time Ophthalmologist's*	*Nurses Full-Time*
Jerusalem ...	7,600	1/3	10
Tel Aviv ...	7,000	1/3	5
Haifa ...	2,000	1/4	2
Tiberias ...	900	1/3	2
Safad ...	750	—	1

The above table shows the time of the physicians as allocated in the budget. In reality, they devote much more time to the anti-trachoma work.

In the colonies, the anti-trachoma work was begun only in 1924. The ratio of infection was greater there than in the towns. There are many reasons for this condition, the chief of which are: (1) the Arab workers living in the colonies, most of whom are affected with trachoma; (2) bad sanitary conditions in most of the old colonies; (3) insufficient water supply; (4) low cultural level of the population.

Most of the colonies had no resident physicians before the war. After the war, through the efforts of the Hadassah and the Zionist Executive, organized medical service was provided for nearly all the colonies. It then became possible to introduce systematic anti-trachoma activity in the rural settlements.

The circuit ophthalmologist has to make systematic rounds of all the rural settlements in the country. The system of daily treatments is the same as that in the city schools, with the difference that in most of the colonies the adult population is treated as well. The ophthalmologist examines children and adults, records his diagnoses on special charts, and outlines the method of treatment. He performs the necessary operations and gives instructions to the local physician for treatment of eye cases. The children in the colony schools are subject to the same rules as those in the city schools. The periodic visits of the ophthalmologist are very important. The village medical staff is composed of the general practitioners and the nurses, who were afraid to assume the responsibility of the anti-trachoma work. When the specialist began to make frequent visits, however, they willingly consented to administer the daily treatments. This is very monotonous work, and the visits of the ophthalmologist stimulate the interest of the medical staff. Attention is also given to preventive measures. The visiting ophthalmologist arranges lectures and has discussions with children, parents and teachers.

The comprehensive and persistent work in town and country has shown good results, as can be readily seen from Tables 1 and 2 attached.

In all the Hebrew schools of Palestine there were in

1918,	among	8,395	children,	3,420	cases	of	active	trachoma—	40.7%
1923,	"	13,375	"	2,104	"	"	"	"	15.75%
1925,	"	16,053	"	1,933	"	"	"	"	11.7%
1926,	"	18,491	"	1,927	"	"	"	"	10.4%

These results are not bad, but very much still remains to be done. During the last three years there was no great decrease of trachoma in the Jewish schools, the ratio having remained at about the same level—between 10 and 12 per cent.

We have come to a dead stop. Our work requires fundamental changes and improvement.

The balance of trachoma in the schools weighs against us. The number of children with trachoma who enter the schools at the beginning of every year is perhaps greater than the number cured during the previous year (see Table III). This is the crux of the problem in the anti-trachoma campaign.

The trachoma nest is in the family, and the family spreads trachoma. It is obvious from Table III that the family sends large numbers of children infected with trachoma into the schools every year.

TABLE I.

TRACHOMA IN THE JEWISH TOWN SCHOOLS IN PALESTINE.

Year	Per cent	Total Cases	Per cent	Cured Cases	Per cent	Active Cases	Examined
Tiberias							
1913–14	92.4	171	9.8	17	83.2	154	185
1918–19	81.8	423	3.5	18	78.3	405	517
1923	59.7	355	16.6	99	43.1	256	594
1924	53.3	297	8.8	49	44.5	248	556
1925	53.8	469	8.0	70	45.8	399	871
1926	54.7	529	18.2	176	36.5	353	965
Haifa							
1913–14	29.2	134	5.9	27	23.3	107	459
1918–19	52.6	307	3.6	21	49.0	286	583
1923	20.7	221	8.2	88	12.5	133	1,063
1924	21.7	263	7.7	93	14.0	170	1,208
1925	17.8	332	7.1	135	10.7	197	1,827
1926	15.6	324	9.0	187	6.6	137	2,063
Tel Aviv							
1913–14	10.6	90	——	——	10.6	90	846
1918–19	73.0	133	8.2	15	64.8	118	182
1923	31.0	1,017	14.9	489	16.1	528	3,273
1924	24.5	1,048	12.4	531	12.1	517	4,266
1925	17.8	997	10.1	566	7.7	431	5,695
1926	15.5	826	9.5	503	6.0	323	5,336
Jerusalem							
1913–14	27.3	1,759	1.1	69	26.2	1,690	6,437
1918–19	44.2	1,536	22.6	784	21.6	752	3,471
1923	22.9	1,171	13.6	695	9.3	476	5,078
1924	21.8	1,264	10.2	590	11.6	674	5,789
1925	22.4	976	12.9	564	9.5	412	4,342
1926	21.7	1,359	12.2	765	9.5	594	6,223

SAFED

Year	Per cent	Total Cases	Per cent	Cured Cases	Per cent	Active Cases	Examined
1913–14	———	———	———	———	———	———	———
1918–19	64.0	230	9	33	55	197	359
1923	33.2	205	11.5	71	21.7	134	612
1924	34.5	168	7.2	35	27.3	133	486
1925	42.2	266	14.9	94	27.3	172	630
1926	45.2	281	18.5	115	26.7	166	620

TOTAL

1913–14	27.2	2,154	1.42	113	25.76	2,041	7,927
1918–19	51.3	2,629	17.0	871	34.3	1,758	5,112
1923	27.5	3,119	13.0	1,484	14.5	1,635	11,278
1924	24.6	3,040	10.5	1,298	14.1	1,742	12,305
1925	23.0	3,040	10.8	1,429	12.2	1,611	13,165
1926	21.8	3,325	11.5	1,752	10.3	1,573	15,207

TABLE II.

TRACHOMA IN THE JEWISH RURAL SCHOOLS IN PALESTINE.

Year	Per cent	Total Cases	Per cent	Cured Cases	Per cent	Active Cases	Examined
1913	32.6	457	5.4	75	27.2	382	1,402
1918	56.0	1,841	5.4	179	50.6	1,662	3,283
1923	34.5	726	12.2	257	22.3	469	2,097
1924	39.4	851	10.0	217	29.4	634	2,175
1925	29.0	837	17.8	515	11.2	322	2,888
1926	21.7	734	11.0	380	10.7	354	3,284

TABLE III.

NUMBER OF NEW CHILDREN ENTERING SCHOOLS IN 1925-1926 INFECTED WITH TRACHOMA.

City	*Total No. of Children*	*Trachoma Active*	*Per cent*
Jerusalem ...	1,694	248	14.5
Tel Aviv ...	2,475	135	5.4
Haifa ...	686	67	9.7
Tiberias ...	209	96	45.9
Safad ...	118	22	18.6
Total ...	5,182	568	10.9

General examinations of the whole population of certain colonies show the prevalence among the families. At Nahliel, 23.8 per cent of all families were infected; at Atlit, 53 per cent; at Kfar Taber, 48.5 per cent; and at Sedjera, 54 per cent. Conditions in the old city of Jerusalem, in Tiberias and Safed are even worse.

The child is infected not in school, but during the pre-school age,

or at home during the vacations. He is infected by his mother, brother, sister or other members of the family at a very early age.

Trachoma is a disease which can and must be prevented. Insufficient attention has been paid to preventive work. There have been only rare lectures and two publications (a leaflet on care of the eyes and prevention of disease, and a popular booklet for school teachers on trachoma and other infectious diseases of the eye).

TABLE IV.

THE NUMBER OF TRACHOMA CASES AMONG THE NEW PATIENTS IN THE EYE CLINIC OF THE HADASSAH MEDICAL ORGANIZATION, JERUSALEM.

Year	*Per cent*	*Trachoma Cases*	*Total Number of Patients*
1921	18.4	517	2,793
1922	17.1	677	3,953
1923	15.1	503	3,328
1924	18.2	656	3,528
1925	12.3	465	3,770

The Hadassah has given most of its attention to the systematic treatment in the schools and to the eye clinics in the towns. These eye clinics are always crowded with patients and do not and cannot be very helpful in the general anti-trachoma work. This will be seen from Table IV, attached, which shows the proportion of trachoma patients to the total number of patients in the Hadassah eye clinic in Jerusalem. There is no doubt whatever but that the school work has very great preventive value in regard to the spread of trachoma and of the numerous complications of the disease.

TABLE V.

TRACHOMA COMPLICATIONS AND CORNEAL CASES AMONG SCHOOL CHILDREN.

Year	No. Children Examined	Entropion Trichiasis	Pannus	Macula Corneal	Staphy. Corneal	Phthisis bulbi
1918–19	8,395	123	40	99	14	31
1923–24	13,470	6	18	49	—	—

But we have now gained enough knowledge and experience in the epidemiology of trachoma to be able to exterminate it,—not only to cure, but to prevent the disease.

There is but one course to be followed: in connection with the school work, *to penetrate into the family and the home.* All our work must be improved in accordance with this principle.

1. We must record all cases of trachoma among the Jews of Palestine. Reporting of trachoma cases must be made obligatory.
2. We must treat and cure all these cases.
3. We must prevent the disease.
1. Systematic examinations must be made of the whole popula-

tion from house to house, and family to family, especially in such places where the population is congested and poor. All trachoma patients must be recorded and sent for daily treatment.

2. Conditions for receiving the daily treatment must be made as easy as possible. The trachoma treatment is painful and prolonged. In order that the patients may lose a minimum of time, it is essential that the clinic be near their homes and that the number of patients received there be limited. *This involves opening local anti-trachoma dispensaries.*

A nurse should be attached to each anti-trachoma dispensary. It would be her duty to visit the homes of the district systematically, to send to the clinic all persons infected with trachoma, and there to give them the necessary treatment under the instructions of the ophthalmologist. She must also do preventive work during her home visits.

There must be opportunity to give hospital treatment for grave cases of trachoma. This would involve beds for eye patients in all the Hadassah hospitals in a ratio of not less than one eye bed for every ten beds in the hospitals. It is suggested that an ophthalmic hospital be opened to which the most difficult cases could be sent for treatment, and where all the scientific research could be done.

3. Education of the masses. Each individual must be taught the dangers of trachoma and how to avoid infection. Measures of education would be:

(a) Obligatory lessons in the hygiene of the eye and especially in prevention of infectious eye diseases in the schools.

(b) Public lectures with demonstrations and moving pictures; popular publications, etc. The public must be kept constantly interested in preventing the disease.

4. Last, and most important, improvement of general sanitary conditions. Adequate supply of good water for the whole population.

All the anti-trachoma work ought to be concentrated in one department, a department for the prevention of blindness, to be part of the Nathan and Lina Straus Health Center. Such a department would do not only anti-trachoma work, but would conduct a large scale activity for the saving of sight. Almost nothing has hitherto been done to examine the vision of school children, and to correct faults of refraction.

Work such as is above outlined would be certain to bring decisive results within a relatively short time.

Mental Diseases.

There are but two hospitals for the insane in all Palestine. One is a Government hospital at Bethlehem; the other is a private institution, the Ezrath Nashim, in Jerusalem. The need for further facilities for these unfortunates and for the development of a comprehensive program for the prevention of mental diseases and the promotion of mental hygiene will be discussed.

The Government Mental Hospital, or hospital for the insane at Bethlehem, was established in 1922. It has a capacity of 60 beds.

At the time of our visit, there were 63 inmates, of whom 22 were Jews (12 male and 10 female). A special kosher kitchen is provided. Before the war, the building was a German orphan asylum. It is well constructed of stone, on a splendid location, with ample grounds and garden space used to grow vegetables and raise chickens. This also serves as a pleasant occupation for some of the patients. The institution is clean and well managed. It is under the direction of Dr. M. Malouf, who is also Medical Officer of Health of Bethlehem and vicinity. He visits the asylum twice a month. There is an English matron with two trained nurses and adequate help. The treatment of the insane is humane, but no scientific work is attempted. The cases are mostly chronic, namely dementia praecox and some manic depressives. There is only an occasional case of syphilitic psychosis and little or no mental deterioration due to alcohol.

It is proposed to extend the building in order to accommodate 300 beds. This would be practical and adequate for the present needs of the country and for some time to come.

The Ezrath Nashim Hospital is situated in Jerusalem and is sponsored by Mrs. Yellin whose work and struggles for this institution excite admiration. This hospital was founded about 30 years ago by a group of women in Jerusalem. There were accommodations for the care of 38 persons at the end of the World War, but with additions since then, the asylum now accommodates 74, which, however, taxes its capacity. There is always a waiting list of applicants clamoring for admission. On the other hand, the asylum becomes clogged with chronic cases. The institution at the time of our visit was in serious financial difficulty.

Our inspection showed a well ordered and well managed asylum. The patients are humanely treated and are all known personally by Mrs. Yellin. The director, Dr. Herman, is capable and gives much of his time to the work.

In all, 96 Jews are cared for in these two institutions, whereas there is need of at least 250 beds to care for the Jewish insane of the country.

The Hadassah Medical Organization also is interested in mental hygiene and the psychoses, and this part of the work is headed up by Dr. Rosenthal, who is Neurologist of the Hadassah. In conference with us, he has given the following resume of the situation with recommendations of the needs. His plan is well thought out and deserves careful consideration, although it seems to us that some of its features are in advance of the economic possibilities.

Dr. Rosenthal divides the mental problems of Palestine into two great classes: (1) the psychoses, which need psychopathic service for the acute and chronic cases, and (2) mental hygiene, which deals with the prevention, the care of mild cases, and service before and after asylum treatment. His plan also takes into account the problem of the feeble-minded, etc.

The Psychoses.

The acute cases need hospital treatment; chronic cases should be

placed upon farms, in asylums or in homes depending upon circumstances.

It is estimated that Palestine should have 300 beds for its Jewish insane. This is based upon the ratio in the United States, which is 2 beds in institutions for the insane per 1,000 population, not including epileptics or feeble-minded. There is probably a higher ratio among Jews on account of a more highly nervous organization and the factors of heredity.

The sex distribution, in accordance with 74 cases in Dr. Rosenthal's Hadassah Ambulatorium at Tel Aviv and Jerusalem for the year 1926 is as follows: males, 27 (52 per cent); females, 47 (48 per cent).

The excess of female insane in Palestine is accounted for by the fact that there is practically no alcoholic insanity and almost no syphilitic psychoses, which afflict men especially; also because of the age of the population, mainly young workers between 18 and 30 years. The prevailing types are dementia praecox and the acute phases of manic depressive psychoses.

There are, in fact, no reliable statistics concerning mental disease in Palestine. It is difficult enough to obtain these figures from better organized countries. It should also be noted that the Oriental Jews seem to have less psychosis, for the reason perhaps that they are not so susceptible and that they live a more primitive life. There are in all about 25,000, mainly Ammonites.

It is perhaps more important to have a sympathetic understanding of mental habit for psychic sick than for ordinary medical and surgical diseases. This is especially true for acute and curable cases which should not have the barrier of the difficulties of strange language, forbidden diet, or other causes of mental irritation. Dr. Rosenthal believes that a hospital for mental diseases with 50 beds should be established in Tel Aviv, because this is a focus where one-third of all the Jews in Palestine live. This was also recommended by the Vaad Habiruth, but refused by the Government, for it is believed that the extension of the hospital at Bethlehem would serve the purpose for the present. In a letter dated February 10, 1927, Dr. Briarcliff, Director of the Department of Health, Government of Palestine, at Jerusalem, wrote: "It is very unlikely that the Government will provide or maintain a mental hospital for the Jewish community at Tel Aviv. The cost of such an institution for one section only of the community would necessarily have to be covered by a voluntary organization or by the community itself."

The Government is willing to give 50 dunams of land, about three kilometers from Tel Aviv, for a hospital if built by private funds. This may be useful for occupational therapy and might well be near a future hospital for mental diseases. Acute cases of mental disease are very expensive; the chronic cases can get along with food, clothing and shelter, but must have medical care.

Minor Psychopathic Cases.

There are, of course, many minor psychopathic cases, also known as petits mentaux, or border-line cases, and they present more a social

than a medical question. To this class belong also the morons and feeble-minded. No figures are available as to their number, but one gets the impression that they are even more numerous in Palestine than in the United States or England. They present the same problem in Palestine as elsewhere and should be handled along similar lines.

In November, 1925, the Hadassah started a neuropsychopathic clinic under Dr. Rosenthal's direction, in Jerusalem, with an extension in Tel Aviv. This clinic has been so successful and so overcrowded that people come at four o'clock in the morning in order to get a ticket for attention.

In time, Palestine should have clinics for outpatient and social service work for the needs of its mentally defective and mentally diseased. It could also make good use of a preventorium, which is important in the realm of mental hygiene. Furthermore, it needs a course of instruction for nurses in mental hygiene, similar to that given at Smith College, which takes about eight weeks. It would be well if a psychological laboratory for researches, tests and studies could be developed, perhaps in connection with the University. It also needs facilities for physiotherapy, for rheumatic, myatic and neuralgic cases, for there are many of them; in fact, one-third of all the cases in some of the neurological clinics are of this disabling class. Haliuzim are not accustomed to hard physical work on the land which seems to predispose to such troubles, aggravated by the change of temperature and climate and unsuitable dress. Hence, there is considerable sciatica and lumbago.

Venereal Diseases.

It is difficult to obtain anything like satisfactory vital statistics concerning the ordinary infections which prevail in Palestine, but the dfficulties of obtaining reliable figures concerning the venereal diseases, there or anywhere, are almost insurmountable. There are few facts at hand, therefore, upon which to form a basis, but the impression among physicians is unanimous that there is comparatively little gonorrhea and less syphilis.

Syphilis.

The cases of this disease that are seen, both in the hospitals and in private practice, seem to be of a rather light variety. One thing is quite certain, and that is that the so-called parasyphilitic sequellae, such as locomotor ataxia and paretic dementia, rarely occur. According to the testimony of the physicians, they are not seen in their private practice and they occur but rarely in the hospitals for the insane and other institutions.

On account of the crowded and insanitary conditions under which the Arabs live, chancres and the early stages of syphilis are sometimes seen. There was a nest of infection in the district about Hebron, and one of us spent a day in Halhul, an Arab village in the neighborhood, to study the problem. The cases were being efficiently treated with the newer remedies and the response was satisfactory. The disease

was well in hand. It was the opinion of those who studied syphilis among the Arabs in this region that the cases were not venereal, but for the most part were innocent infections contracted by close personal contact and unhygienic habits. The Mukhdah of the town of Halhul told me that everybody must have this disease, and it is better to have it in this life than the next. This incident is given only to impress the fact that modern health methods designed to prevent disease and guard against infection have to meet with the traditional prejudices of many centuries, and emphasizes the fact that education beginning in the schools will be one of the important levers here as elsewhere.

Gonorrhea.

According to the best information that could be obtained, it seems that there is very little gonorrhea among the Arabs except among the Christian Arabs. There is some among the Jews, more particularly the new immigrants, but there is not much of this disease all told. These are only impressions, and figures are wanting.

The whole subject of the venereal diseases has been especially studied by Dr. A. Dostrovsky, who is the Chief Dermatologist of the Rothschild Hospital. He has prepared especially for this report the following statement which gives the facts concerning the venereal diseases, their occurrence, statistics, nature and method of spread; also a discussion of the problem of prostitution and statistics concerning the venereal diseases at the various clinics, especially the Rothschild Hospital, in Jerusalem. The cases are given by district and also by races and religion, and the problem is discussed by one who has made a special study of it on the ground.

Measles.

Serious epidemics of measles afflicted the country in 1923, 1924 and 1925, with an unusually high fatality, indicating that Palestine had probably been free of measles for many preceding years. In fact, during 1921 only one death from measles was recorded, being 7.6 per cent of the total cases; in 1922 there were 10 deaths, being 8.6 per cent of the total cases. By 1923 the epidemic became outspoken and serious. There were during that year 6,936 cases, with 1,232 deaths, giving a case fatality rate of 17.7 per cent. The outbreak continued the next year, 1924, with little abatement, there being 5,998 cases with 824 deaths, and a case fatality rate of 13.7 per cent. The situation improved in 1925, and the severity of the disease also lessened to 10 per cent. Measles is now on the decline both in severity and in general incidence.

During the summer of 1927, while we were there, the disease gave indications of increasing. The type, however, is mild.

Measles in Palestine runs true to type, in that it prevails especially in the cold winter months and the deaths are due to respiratory complications. An unusual feature of the disease was a number of cases complicated with untractable enteritis.

Scarlet Fever.

Scarlet fever is not prevalent, and when it does occur is of the mild type which corresponds to the general experience with this disease in our country and elsewhere.

Diphtheria.

Last year 40 cases of diphtheria with 10 deaths were reported to the Department of Health. Jaffa and Jerusalem towns were mainly affected. The disease was more prevalent than in 1924, when 24 cases and 1 death were reported. The high proportion of deaths to cases is attributed to delay in calling medical attention.

Smallpox.

No case of smallpox has occurred in Palestine since 1924. The main outbreak occurred in the Hebron district in 1922, when there were 157 cases, and this was due to direct *inoculation with smallpox virus* by the medicine man of the village in which the first case occurred. This epidemic is the most interesting one of modern times and is fully described by Dr. McQueen, Lancet, January 23, 1926.

There was much smallpox in Egypt during 1925, but Palestine was spared, because of the large number of vaccinations done yearly. In 1926, 79,692 primary vaccinations and 77,283 secondary vaccinations were performed. All immigrants are required to be vaccinated before entering the country.

All the vaccine virus used in Palestine is propagated in the Government Laboratory by Dr. G. Stuart.

Hookworms and Other Intestinal Worms.

Hookworms.

Hookworm disease is not a sanitary problem in Palestine because of the long dry season and the hard surface of the soil. There is a focus in Petah Tikvah, where in 1924 10 per cent of 200 examined were positive, although the infestation was light. Dr. Stuart has given us the following memorandum, which he prepared especially for this report.

The relative unimportance of this disease in Palestine may be gauged from the returns made for the past 6 years: 1921, 1 case; 1922, 2 cases; 1923, 1 case; 1924, 26 cases; 1925, 8 cases; 1926, 21 cases; i. e., 59 cases in 6 years.

The reason for the detection of 26 cases during 1924 is that a special investigation was undertaken to discover whether the disease was in any way prevalent in the neighborhood of an already recognized focus. The presence of ankylostomiasis having been demonstrated during 1924 in Petah Tikvah, a Jewish colony of some 5,000 inhabitants, lying 12 kilometers northeast of Jaffa, it was decided to determine the incidence, if any, among the Arab population of those villages in

the vicinity from which the labor for the colony's orangeries is mostly derived.

While out of some 200 specimens of feces taken at random from these laborers and examined in the Central Laboratories both by smear and "culture," 13 were found positive, it is noteworthy that specimens taken from Arab school children have always been negative.

Petah Tikvah with its well irrigated orange groves is regarded as the principal focus of infection, but so far hookworm has not been found in other localities equally favored as regards water and soil.

Other Intestinal Worms.

Ascaris, or the common roundworm, is the most frequent of the intestinal worms in Palestine, and next to that trichuris, or the whipworm. The subject has not been carefully studied. Autopsies are not made and the few investigations are preliminary. The best work has been done by Dr. George Wittenberg in the Hebrew University at Jerusalem.

Intestinal worms vary with the great diversity of climate. The figures given below are based on comparatively few observations, but are the best obtainable. Buxton and Krikorian (Trans. Royal Soc. of Trop. Med. and Hyg., June, 1922, XVI, 3) found in school boys:—

	No. Examined	*Positive*	*Per Cent.*
Jaffa	318	20	6.25
Sheikh Muivannes	32	5	15.00
Sulemeh	40	2	5.00
Richon le Zion	55	1	0.50
Kifr Uria and Breit Ziz ...	25	3	12.00

The subject was also studied by Felix, who reported in the American Journal of Tropical Medicine, January, 1925, volume 5; and by Kligler, "Helminth Infections in Jerusalem," in the Transactions of the Royal Society of Tropical Medicine and Hygiene, May, 1923, Volume 17, Nos. 1 and 2.

Oxyuris is seldom found, the climate being mostly too dry.

Strongyles exist near Tiberias.

Bilharzia exist around Jaffa. (See separate discussion, page 181).

Hymenolepis nana are found occasionally.

Taenia solium are frequent.

Heterophyes heterophyes, a small intestinal trematode which comes from fish and is found in the small intestines, is probably harmless. Two per cent in Jerusalem are infested.

Taenia saginata is seldom found.

Echinococcus is seldom diagnosed.

Trichina are not found—there are few hogs.

Dracunculosis is rare, and when it does occur is imported from Arabia.

Filaria are not known.

A study of the intestinal worms among patients in the clinics of Hadassah in 1926, gives the following results:—

	Helminthiasis Cases	*All Patients of the Intern and Children Sections*
Jerusalem	242	10,005
Tel Aviv	161	8,199
Haifa	136	5,960
Tiberias	162	8,992
Safed	67	1,963
	768 or 2.2%	35,169

The most frequent is *Trichocephalus*, 55 per cent; *Ascaris lumbricoides* occupies second place, 29 per cent; the third place, *Taenia saginata* and *T, nana*, 9.5 per cent. The remainder of cases were: Oxyuris verm., 3 per cent; *Ancylostoma duodenalis, Botriocephalus,* and *Strongyloides.*

The percentage-calculation is based on data from the laboratories.

Typhus Fever In Palestine.

Typhus fever has a special interest on account of its special prevalence among Jews. The mild form of the disease which now prevails in Palestine resembles the kind of typhus fever we have in the United States. There is some question as to whether this form of typhus fever is louse-borne, because it prevails especially in the summertime and has a rural distribution. In view of the importance of this disease, the following is given from a memorandum prepared for us by Dr. G. Stuart, Director, Public Health Laboratory Service, Government of Palestine, July, 1927.

Doubtless introduced during the winter of 1915 by Turkish troops transferred through Asia Minor and Syria to Palestine from infected war fronts, typhus fever raged in epidemic form among a people of enfeebled resistance in 1916 and 1917 up to the time of the British entry and for several months thereafter.

The period of maximum incidence may be regarded as at an end by April 1918, although from this date until March 1919, 121 cases were recorded. No comparison can be drawn accurately, either in regard to the number of persons affected or the severity of the disease, between conditions from 1921 to the present and those of the previous period. Nevertheless, since 1921 there has existed and a condition of affairs presenting for consideration a complex problem of remarkable interest.

The condition may best be appreciated by an analysis of the cases recorded during the past six years:—

1921 totalled 63 cases: 49 occurred among Jews, of whom 46 resided in the Jaffa area.

1922 had 33 cases: 29 were Jews, of whom 26 resided in the Jaffa area.

1923 showed 35 cases: of this number 28 were Jews, of whom 22 belonged to the Jaffa area.

1924 with 37 cases totalled 33 Jews affected, 19 in the Jaffa area.

1925 had 50 cases, including 44 Jews, of whom 19 belonged to Jaffa.

1926 with 86 cases included 68 Jews, 26 belonging to Jaffa.

The total and racial incidence throughout Palestine is set forth below:

Year	Total Cases (Moslems, Christians and Jews)	Jews Affected	Jaffa Area Total Cases (All Religions)	Jews Affected
1921	63	49	48	46
1922	33	29	27	26
1923	35	28	25	22
1924	37	33	20	19
1925	50	44	22	19
1926	86	68	28	26
In 6 Years	304	251	170	158

From these figures three important facts emerge:—

(1) Of the total 304 cases, 251 or 82.5 per cent are Jews.

(2) The number of cases occurring in the Jaffa area is 170, or 56 per cent of the total incidence throughout Palestine.

(3) Of the cases occurring in the Jaffa area 158 or 93 per cent are Jews, and this figure represents 52 per cent of the total cases in Palestine.

What is the explanation of this remarkable distribution?

Two theories naturally present themselves for consideration.

(1) As a result of residual infection carried over from the epidemic years 1915-1917, it might reasonably be expected that, once the epidemic had spent itself, cases of a more or less sporadic nature would tend to occur just as fresh susceptible persons appeared and accumulated in what might be termed endemic foci.

(2) As a result of the entry into Palestine of immigrants from countries where the disease had been for several years epidemic. Such potential infection would, of course, be restricted to that part of the population, local or immigrant, not rendered immune by previous attack.

Now in Palestine during the years following the epidemic, the curve of incidence rapidly declined until 1921, when it again showed a very appreciable rise on the occurrence of 63 cases. Of this number, 49 were Jews, 46 of whom (94 per cent) resided in the Jaffa area.

In accordance with the terms of the Mandate, immigration was formally permitted into Palestine as from September 1, 1920, and from that date until today 90,738 Jews have entered.

Had these immigrants hailed from countries free from past or present typhus, "residual infection" would be adequate explanation for the outbreak which occurred largely among the immigrant population; but in point of fact the vast majority came from those parts of Middle Europe wherein the disease had raged both during and after the Great War.

Jaffa, moreover, is the main port of entry and chief industrial center in Palestine for Jewish immigrants, and in Jaffa and its immediate environs these immigrants are lodged and employed until their

dispersal to various settlements in and near towns throughout the country.

The striking disproportion amongst those affected, both as regards race and localities affected, might with some reason urge one to lay stress on the probability that the disease was introduced "de novo" by recently arrived immigrants, especially also when one has regard to the low rate of incidence among the local inhabitants of Jaffa—doubtless due to immunity conferred by the epidemic years.

A parallel to this suggested mode of introduction and to the position generally is to be found in New York (c. f. Rosenau "Preventive Medicine and Hygiene").

Present day typhus in Palestine may be regarded as owing its continuance to one of several factors:—

(a) the presence of endemic foci left after the epidemic of 1915-17;

(b) its re-introduction by recent arrivals—immigrants from typhus-stricken countries;

(c) the persistence of a curiously mild, often atypical, hardly recognizable form of the disease which without the aid of the Weil-Felix reaction (later to be referred to) would in many cases be overlooked.

Type of Typhus.

The extraordinary mildness of the disease may be appreciated from the subjoined figures:

Year	*Total Cases*	*Total Deaths*	*Percentage*
1921	63	5	8
1922	33	0	0
1923	35	2	5.7
1924	37	1	2.7
1925	50	0	0
1926	86	1	1.2

In 6 years 9 deaths have occurred in 304 cases, i. e., less than 3 per cent.

It is commonly accepted that in countries where typhus has been epidemic and where, as a consequence, immunity exists, the type may be mild, even of an ambulatory nature. As a result, both in respect of its onset and symptomatology, it may readily be confused with a light paratyphoid fever. This obviously applies to Palestine. The percentages of occurrence of various types of typhus are as follows:

1. Ataxo-adynamic 5.1 per cent
2. Mild clinical typhus 81.8 per cent
3. Atypical 13.1 per cent

In 13.1 per cent of all cases NO RASH WAS OBSERVED.

Diagnosis by means of the Weil-Felix Reaction.

Originally (1921-1924) the ordinary quantitative method was employed—agglutination titre of the patient's serum with B proteus X 19

and X 2 being estimated. Agglutination in 1:80 was regarded as pathognomonic. By this means the following figures indicate the value of the reaction:

No. of cases clinically positive with Weil-Felix reaction:

positive 102
negative 0

No. of cases clinically negative with Weil-Felix reaction:

positive 18

More recently the diagnosis of typhus fever has been based on the qualitative receptor analysis method of Weil and Felix. This absolutely reliable test gives a well marked small-flaking agglutination with both the H and O forms of the Bacillus proteus X 19 in a dilution of 1:100 in positive cases early in the disease.

The whole question is discussed at length in "Observations on the incidence of Typhus Fever in Palestine with Special Reference to Type and Diagnosis", by G. Stuart, Journal of the Royal Army Medical Corps, October, 1924, a copy of which is appended.

Malta Fever.

(*Undulant Fever.*)

Malta fever is contracted mainly by drinking raw goat's milk. This is a serious infection quite prevalent in many places about the Mediterranean basin. Only 13 cases of the disease are known to have occurred in Palestine during the past 4 years. Goats and much goat's milk is used and the possibilities are evident. The situation in Palestine is well stated by Dr. G. Stuart in a personal memorandum to us:—

Despite the very considerable incidence of contagious abortion among the cattle of Palestine, the writer, from personal experience extending from 1918, reported in the 1922 Annual Report of the Department of Health that "no case of Malta fever has been found among people whose duty it has been to look after the herds where contagious abortion has appeared. Indeed, in this connection, Palestine may be considered 'Malta fever free' ".

In 1924, however, several well-defined cases of undulant fever were observed. Laboratory investigation of the blood serum and milk of the goats supplying milk to the patients conclusively proved the source of infection. Positive results were obtained in 13 out of 68 examinations, establishing thereby beyond dispute, undulant fever to be a definite endemic pathological entity in Palestine. In all, 13 cases have been recorded and in each case, with but one exception, could the partaking of goat's milk be incriminated. The exception, however, is of sufficient interest to warrant record.

A boy whose blood agglutinated the B. melitensis in a dilution of 1:6,000 and his sister, who had previously suffered from an undiagnosed disease of a chronic type with exacerbations, resided on a farm where only cows were kept. The most careful inquiries proved that neither the boy nor his sister had ever partaken of goat's milk or the products of such milk. They had, however, frequently drunk milk, both boiled and unboiled, derived from a small herd of cows belonging

to their father. Now this small herd was affected with contagious abortion to the extent of 9 cows out of a total 11, and the source of infection in these cases is of considerable interest in view of the belief held by numerous observers today that the B. abortus, one of the mutations of the Brucella group, is capable under certain conditions of conveying infection to man. The reprint appended, "The Occurrence of Contagious Abortion of Cattle in Palestine," Transactions of the Royal Society of Tropical Medicine and Hygiene, Vol. XIX, No. 3, 1919, by Stuart, refers.

Incidence by Localities and Religions (1924-1927)

Year	*No. of Cases*	*Locality*	*Religion*
1924	3	Jerusalem Town	3 Christians
1925	2	Jerusalem Town	2 Christians
1926	0		
1927 (June) ...	8	Jerusalem Town	1 Christian
			7 Jews

RABIES.

Hydrophobia always excites attention, because the disease is almost invariably fatal,—withal preventable. The cases and distribution of this wound infection and other interesting items concerning the intelligent measures used to control it in Palestine follow[1].

1. *Relation of number of persons bitten to number of bitten animals, period 1923-1926.*

	1923	*1924*	*1925*	*1926*	*Total (4 years)*
Bitten persons ...	848	1058	1009	984	3899
Biting animals ...	632	972	895	915	3414

2. *Species of animal biting indicating species susceptible.*

From the above it will be seen that in 4 years 3,899 persons were bitten by 3,414 animals, of which the following species were incriminated:

Dogs, 2,315 (67.8 per cent); cats, 621 (18.2 per cent); Jackals, 184 (5.4 per cent); wolves, 8 (0.2 per cent); other animals—ruminants, herbivores, equines—286 (8.4 per cent).

3. *Seasonal prevalence.*

It is generally held that climatic conditions have little or no influence on the prevalence of rabies, since the virus, from an inability to resist so many physical and chemical agencies, has relatively little chance of an extracorporeal existence.

Here, of the 3,414 biting animals under review:

August, September, October	claim	36.4 per cent
May, June, July	"	29.2 " "
remainder (6 cool months)	"	34.4 " "

[1]These facts and figures were kindly prepared for us by Dr. G. Stuart, Director, Public Health Laboratory Service, Government of Palestine.

4. *Actual incidence of human cases of rabies in Palestine.*

Since 1919, 46 cases have occurred.

Incidence figures for the past 6 years are as follows:—1921, 6; 1922, 8; 1923, 13; 1924, 9; 1925, 3; 1926, 0.

In 1923 the situation had become so serious as to demand drastic steps being taken to tackle the rabies problem. Deaths among bitten persons were mainly accounted for by the ignorance on the part of the generality that any treatment facilities were available in Palestine, or by the fact that the expenses likely to be incurred by traveling to and residence in a strange town acted as deterrents.

The Central Laboratories, therefore, by preparing and issuing a carbolized (killed) vaccine to numerous (15) carefully selected "treatment centers" brought an efficient remedy within the reach of everyone at his very door. The results of this "Decentralization of Treatment" have been most gratifying. The procedure in conjunction with certain legal enactments and with energetic campaigns against the jackal and the pariah dog, chief vectors here, has succeeded for two successive years in freeing the country from human rabies.

5. *Vaccine employed.*

The vaccine in general use consists of a 2 per cent suspension of the brain of a rabbit killed with fixed virus in a solution of 1 per cent phenol in distilled water. Before being bottled and issued, however, it is diluted with an equal quantity of normal saline solution. Of this vaccine, each person, irrespective of age, sex, or severity of bite, receives intracutaneously 5 cc. daily, 2.5 cc. on each side of the abdomen, over a period of 14 consecutive days.

The total quantity of nerve substance injected by this method of universal dosage is 0.7 grams, and its administration is not followed by any unpleasant results.

6. *Dosage and results of treatment.*

Two different dosages have been employed since 1923. During the first period, the original Indian method (Kasauli), 2 cc. of a 1 per cent emulsion daily for 14 days, was tried, but it was abandoned shortly in favor of the method now standard for Palestine, 5 cc. of a 1 per cent emulsion daily over 14 consecutive days.

The advantage of adopting the increased dosage will be observed from the comparative statistics of the two periods.

(a) *General statistics.*

	Period 1923-1924 Daily dosage 2 cc. (Kasauli Standard)	*Period 1924-1926 Daily dosage 5 cc. (Standard for Palestine)*
Number of persons treated ...	886	2,260
Number of unnecessary treatments	138	817
Number of regular and complete treatments	748	1,443
Total deaths	9	5
Death rate	1.2%	0.35%
"Failures" of treatment ...	4	0
"Failures" rate	0.5%	0

b. *Statistics of patients-at-risk*

	Period 1923-1924 Daily dosage 2 cc. (Kasauli Standard)	*Period 1924-1926 Daily dosage 5 cc. (Standard for Palestine)*
No. of persons definitely-at-risk		
(a) Proved by laboratory investigation	180	211
(b) Proved by veterinary officer's certificates ...	48	124
No. of persons presumably-at-risk	213	373
Total population-at-risk ...	441	708
Total deaths	9	5
Death rate	2%	0.7%
Total "failures"	4	0
"Failure" rate	0.9%	0

Note 1.

The number of persons presumably-at-risk is limited strictly to those who have been bitten by an animal which (according to all authorities) must be considered rabid, viz:—

(a) if it dies from an undiagnosed disease } within 10 days
(b) if it has been killed } of its biting
(c) if it has disappeared } the patient.

(d) If it shows marked alteration in behavior; if, for example, it makes an unprovoked assault on human beings or other animals, especially if such results in many persons or animals being bitten.

(e) if a jackal makes an unprovoked attack on a human being.

Note 2.

"Failure", in accordance with convention, is applied only to those cases which, in spite of treatment, develop hydrophobia later than fifteen days after a complete antirabic course has been administered. By the same convention are excluded from "failures" all bitten persons dying during treatment or within fifteen days of its completion.

Although this method is adopted in Palestine as elsewhere to differentiate between successful and unsuccessful treatment, it is felt that statistics based on this mode of computation will obviously vary with regard to:—

(a) length of time taken to administer a course of treatment.
(b) lateness of arrival of the bitten person for treatment.

The longer a person defers reporting for treatment and the longer the period of treatment, the lower the "failure rate" of an institute. Such statistics tend unduly to emphasize the value of certain forms of treatments and especially of such as normally require a lengthy period of administration.

7. *More detailed statistical record.*

(a) *Location of wound.*

Of 6,513 persons bitten since 1913, by suspectedly rabid animals, the following gives the location of wounds:

Head	420	(6.4%)
Upper extremity	2,557	(39.2%)
Lower extremity	3,215	(49.4%)
Body	321	(5%)

(b) *Total incidence of human rabies (including treated and untreated):*

(1) Number of cases reported—46.

(2) Animals responsible:

Jackals	19 cases
Dogs	26 "
Wolves	1 "

(3) Relative danger of bites by different animals:

Wolf	1 death in	24=4.2%
Jackal	19 deaths in	683=2.8%
Dog	26 deaths in	4,349=0.6%

(4) Danger according to location of wounds:

Location	*No. bitten*	*Deaths*	*Percentage*
Face	420	27	6.4
Upper extremity	2,557	13	0.5
Lower extremity	3,215	6	0.2
Body	321	0	0.0

(5) Results of treatment:

62 persons were bitten by 13 rabid animals, each of which caused one death.

Although 13 then developed hydrophobia, 49 bitten persons escaped the disease. The proportion, therefore, in this series was 20% deaths to 80% survivals.

(c) *Incidence of human rabies among persons treated at Government institutes only during the period 1923-1926.*

(1) *Mortality among those bitten by definitely rabid animals.*

Rabid Biting Animals		*Bitten Persons*	
Specification	*Number*	*Number*	*Mortality*
Dog	404	777	9
Jackal	132	215	5
Cat	72	105	0
Wolf	6	13	0
Fox	4	10	0
Equines	21	50	0
Ruminants	7	18	0
Total all species	644	1,188	14

Total mortality rate, then, is 1.18 per cent among the 1,188 treated persons bitten by definitely rabid animals.

Dogs and jackals alone were responsible for causing the 14 deaths, and from the above table it will be seen that rabid dogs accounted for 1.16 per cent of their victims despite treatment; rabid jackals, for 2.33 per cent; while rabid cats, wolves, foxes, equines, and ruminants gave no deaths among 196 bitten persons.

While, however, dogs were responsible for the greatest number of deaths among treated persons, the jackal proved twice as dangerous.

(2) *Mortality from location of wounding—figures confined to dog and jackal bites alone.*

Location	*No. bitten*	*Mortality*	*Percentage*
Face	76	7	9.2
Upper extremity	467	5	1.1
Lower extremity	408	2	0.5
Body	41	0	0.0

(3) *Influence of age and sex on mortality.*

(a) Mortality is 1.6 times greater among persons below 15 years of age than among those above 15.

(b) Mortality is 3.3 times greater among males than among females, but the ratio of females to males bitten is as 1:2.

(c) Mortality is highest among boys below 15, and least among females over 15 years old.

(4) *Influence of the method of treatment on mortality rate.*

(a) During the first period, when the Kasauli dosage was employed (total 0.28 g. nervous matter), there occurred 9 deaths among 457 persons bitten by rabid animals. Total mortality rate = 1.97 per cent.

(b) During second period, where the dosage now standard for Palestine was adopted (total 0.7 g. nervous matter), there occurred 5 deaths among 731 bitten persons. Total mortality rate = 0.68 per cent.

Further, no single death from hydrophobia has occurred throughout during the period of treatment among cases who arrived at a treatment center within the first four days and who had the course of injections administered regularly.

No death has occurred during the past 2 years.

No case of abscess formation, no neuro-paralytic accident throughout.

Recent experiments concluded in these laboratories prove that a killed virus conveys an immunity equal to that of a living virus in equal dosage (white rats, 300 gms.)

Finally.

Carbolized killed virus vaccine is employed both for the prophylactic and curative treatment of animals. Canine prophylaxis is secured by the administration of one dose (5-10 cc., depending on the size of the dog) of a vaccine resembling that of Umeno and Doi. Here, however, the vaccine consists of a 20 per cent brain suspension in which the virus has been killed by exposure to the action of 1 per cent phenol at a temperature of 37°C., over a period of 6 days.

The whole question of decentralization of treatment in Palestine is discussed in the attached reprint from the Annals of Tropical Medicine, by Stuart and Krikorian.

Tetanus in Palestine.

Tetanus is more prevalent in warm countries, and we therefore made

a special study of its incidence and distribution in Palestine. It was a pleasant surprise to learn that this preventable wound complication occurs in moderate amount. During our inspections of the hospitals and clinics throughout the country we saw no case of tetanus.

Case and Death Incidence by Districts.

Year	Jerusalem District		Jaffa District		Haifa District		Samaria and Galilee District		Total for Districts	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1921	0	0	7	3	4	1	3	3	14	7
1922	4	1	5	5	2	1	2	1	13	8
1923	5	4	8	8	8	5	5	3	26	20
1924	3	1	11	9	5	2	7	7	26	19
1925	9	3	12	6	10	6	6	1	37	16
1926	2	2	20	17	6	2	6	4	34	25
1921—1926	23	11	63	48	35	17	29	19	150	95

Thus, in 6 years there were 150 cases of tetanus in Palestine, distributed as shown above.

Of the total number 95 died. Mortality rate = 63.3 per cent.

Of interest is the occurrence during 1926 in Haifa of 3 cases which were regarded as being in all probability due to infection acquired in the administration of a course of intramuscular injections of quinine against malaria. A study of the facts connected with this unfortunate accident convinced us that it was probably due to the hypodermic syringe or technic used, and that the preparation was not infected because these were the only cases. (See "The Relation of Tetanus to the Hypodermic or Intramuscular Injection of Quinine," by Sir David Semple. Scientific Memoirs of the Government of India, No. 43.)

Bilharziasis in Palestine.

A special study was made of bilharziasis because the infection is exceedingly common in warm countries, especially the Orient and Africa, where in parts more than half the population harbor these parasites. They are also occasionally found in the United States and in other favored countries.

Flukes are flat, leaf-shaped worms and are responsible for a group of diseases. There are a number of kinds of flukes. These parasitic worms cause loss of efficiency, diminished vitality and lowered resistance; and sometimes serious disease.

Flukes have one of the most complicated and interesting life history of all known parasites. Their life cycle includes five different phases of existence. All flukes need a fresh water snail to complete their development. Prevention therefore focuses itself upon the particular snails that harbor this parasite.

Fortunately Palestine has only one small endemic focus of this disease, in the Jaffa area. The menace is well understood by the health authorities, and effective preventive measures are taken.

The following facts were kindly furnished by Dr. G. Stuart, Di-

rector of the Public Health Laboratory Service, Government of Palestine, and were compiled especially for this report.

Case Incidence by Districts.

Year	*Jerusalem*	*Jaffa*	*Haifa*	*Samaria and Galilee*	*Total in Palestine*
1921	2	72	—	—	74
1922	8	9	2	—	19
1923	7	17	2	—	26
1924	8	22	1	1	32
1925	4	18	1	—	23
1926	7	4	5	5	21
Total 6 yrs. ...	36	142	11	6	195

Urinary schistosomiasis is endemic in the Jaffa area. In 1921 it was found that 10 per cent of the school children there were infected. Infections are mild and yield readily to treatment by intravenous injections of tartar emetic.

The distribution of the infected snail Isodora (Bullinus contorta) is limited to an area of 10 miles extending from Jaffa. Undoubtedly present before the war (Masterman) and during the war (Stuart), it was not known to what extent pre-war schistosomiasis occurred; it is, indeed, felt to have been rare; increased incidence would be explained by the large numbers of Egyptian laborers infected with bilharzia who were employed during the Great War by the Army in Palestine.

There is no authentic case of intestinal schistosomiasis having been contracted in Palestine. Such cases as have been reported appear to have derived their infections from either Egypt or Yemen.

So far, the specimens of Planorbis found here do not belong to the recognized host of S. Mansoni.

The measures adopted to exterminate urinary schistosomiasis in Palestine are as follows:

1. Propaganda (instruction in schools, posters, etc.)
2. The use of copper sulphate in wadi beds after the winter rains, and in storage tanks employed for the irrigation of orange groves.
3. The periodic drying of irrigation canals.
4. The emptying and "sweeping" of birkets or tanks in orange gardens as a result of continuous routine inspections by the epidemic Medical Officer.

The results have been entirely successful.

Reference.

Buxton, P. A., and Krikorian, K. S.: "On Schistosomiasis in Palestine." Transactions of the Royal Society of Tropical Medicine and Hygiene, June, 1922.

Bubonic Plague.

There was an outbreak of this infection in 1922 which centered mainly around Jaffa and Tel Aviv, numbering sixty-three cases in all. No case has occurred since 1924.

Plague is a disease primarily of rats and secondarily of man. It is not a new disease in Palestine, for an epidemic is described in the Book of Samuel. The possibility that bubonic plague may become endemic and epidemic in Palestine is a serious public health menace. Practically everywhere in the crowded parts of the cities we found evidence of excessive rat population and in many places in the rural sections complaints were made to us of "the mice that marred the land."

Leprosy.

There are about 40 cases of leprosy known to exist in the country. For the most part, they receive treatment in the Hospital of the Moravian Mission in Jerusalem. Arrangements have been made for dispensary treatment of cases who cannot be admitted to the hospital.

A detailed account of this hospital and its admirable work will be found in the chapter on Jerusalem.

Pappataci Fever.

Pappataci fever, or three-day fever, is a mild but disabling febrile disease of comparatively brief duration. It does not kill and leaves no special sequella, except frequently a tedious convalescence. Almost everywhere we went in Palestine we found pappataci fever epidemic. It is transmitted by the sandfly, *Phlebotomus papatassii*. The control of this disease depends entirely upon further studies to determine the best mode of attack against the insect host. Professor I. Kligler, of the Hebrew University, is working upon this problem.

Leishmaniasis.

(*Kala-Azar, "Dumdum Fever," Oriental Sore*)

Of the various forms of this disease, only the skin form, or oriental sore, is found in Palestine. This infection occurs also under the names of tropical ulcer, Delhi boil, Aleppo boil, Biskra button, Bagdad sore, and espundia. It is a sluggish, painless sore, usually occurring on the exposed surface of the skin. It starts as a pimple, which subsequently develops into an ulcer. The ulcer persists for months or years, finally healing spontaneously. It is thus a local and self-limited form of leishmaniasis. When the sore disappears, it leaves an immunity so that a person never has a recurrence. In Persia, girls are vaccinated on the buttocks in order to save the face.

The infection is contracted from the sandfly. Only the female transmits the disease, which is the same for pappataci fever. The extrinsic period of incubation is eight days, probably passing through a biologic cycle in the fly.

Professor S. Adler, of the Hebrew University, has made a special study of this infection, which in Palestine is not a serious health problem nor a disabling disease. Professor Adler and a number of volunteers in the University infected themselves experimentally in order to study the disease in its various phases. It can be reproduced by rubbing the material from a sore into a wound. Convincing photographs

illustrating interesting features of the infection and the following bibliography show the admirable productive work of Professor Adler on this subject.

Publications by Professor S. Adler.

A Sporozoan of *Phlebotomus papatasii*. Annals of Tropical Medicine, 1925, No. 3.

The Experimental Transmission of Cutaneous Leishmaniasis to Man from *Phlebotomus papatasii*. Ibid. No. 3.

The Mouth Parts, Alimentary Tract No. 4, Salivary Apparatus of the Female *Phlebotomus papatasii*. Ibid, 1926, No. 1.

Further Observations on the transmission of cutaneous Leishmaniasis to Man. Ibid, 1926, No. 2.

The Identity of *Leishmania tropica*, Wright, 1903, and *Herpetomonas papatasii*, Adler, 1925. Ibid, 1926, No. 4.

A Note on the Histopathology of a Case of Experimental Cutaneous Leishmaniasis in Man. Ibid.

On the *Minutus* Group of the Genus *Phlebotomus* in Palestine. Bull. of Entomological Research, April, 1926.

On a Collection of Sandflies of the *Minutus* Group of the Genus *Phlebotomus*. Annals of Tropical Medicine and Parasitology, 1927, No. 1.

In Nature.

The Experimental Transmission of Cutaneous Leishmaniasis to Man.

The Identity of *Leishmania tropica* and *Herpetomonas papatasii*.

The Experimental Transmission of Cutaneous Leishmaniasis to Man from Artificially infected Sandflies.

The Behavior of Cultures of *Leishmania tropica, L. Brasilensis* and *L. infantum* in *Phlebotomus*.

In Hebrew.

The Parasites of *Phlebotomus Papatasii*.

Auto-erythrophagocytosis.

Received for Publication in

The Annals of Tropical Medicine and Parasitology.

Notes on a demonstration of:

1. The Histopathology of Experimental Cutaneous Leishmaniasis in Man.
2. The Differential Diagnosis of Sandflies of the *Minutus* Group of the genus *Phlebotomus*.
3. The Development of *Leishmania tropica* in the Sandfly.
4. The Behavior of a Strain of *L. infantum* in the Sandfly.

Dr. A. Dostrowsky, who is the Chief of the Dermatological Department, Rothschild Hospital, Hadassah Medical Organization, has published a splendid article entitled "A Study of Cutaneous Leishmaniasis in Palestine," which appeared in the Annals of Tropical Medicine and Parasitology, December 17, 1926.

CHAPTER 8.

ISOLATION HOSPITALS, IMMIGRATION STATIONS, MARITIME QUARANTINE STATIONS, QUARANTINE.

Isolation Hospitals.

(*Fever Hospitals*).

Hospitals for the care of acute communicable infections are now established at Jerusalem, where there is an annex to the Government hospital in the Russian Compound; use is also made of the Government hospitals at Jaffa, where there are four pavillions with twelve beds; at Haifa, where there is a separate building; at Nablus, which has an annex extension; and in addition, there is provision for separate rooms in practically all the other Government hospitals for emergency use.

The provision for hospitalization of cases of contagious disease is sadly deficient, especially for the Jewish population. During the past few years the hospitals have been filled with typhoid and dysentery patients, leaving insufficient room for the usual run of other diseases.

Money has been allotted by the Government and plans are prepared for better facilities for fever hospitals, and it is expected that the buildings will be ready for the 1928 season. This activity was probably stimulated by the emergency created by the typhoid epidemic of last year.

While every encouragement should be given the building of hospitals for the acute communicable diseases, the real spirit would be to emphasize prevention so as to render such hospitals unnecessary. It is quite clear that by focussing attention upon the prevention of typhoid fever and dysentery, the shortage of hospital beds and pressure, especially during the summertime, would be relieved.

Immigration Stations.

There are two immigration stations in Palestine, one at Haifa and the other at Jaffa, both under the Zionist Executive. These immigration stations are used to house arriving immigrants for a few days or

until they find a place of work or opportunity. The medical service is furnished by the Hadassah; it is free of charge. All immigrants are given two injections of typhoid prophylactic and are also vaccinated against smallpox.

This is an admirable contribution to immigrant aid work and would be useful in any country for any people as a beneficent service, as well as to prevent the exploitation of persons who find themselves in a strange situation which produces mental stress corresponding to a climax in their lives.

The Haifa Station.

The immigrant station at Haifa has two dormitories with 26 beds each, an isolation building with 6 beds, and tent accommodations for about 300.

In addition to the dormitories, there are kitchen, dining room, shower baths, storage for luggage, infirmary and tent space. The buildings are well constructed, the location is advantageous—near the shore at the southern end of the town.

At the time of our visit, the station was empty on account of the falling off in immigration. It looked clean and well cared for.

The Jaffa Station.

The immigration station at Jaffa has 160 beds with tent space for more. There is no kitchen or dining room and the immigrants eat at the WIZO (Women's Industrial Zionist Organization). At the time of our visit there were 28 immigrants from Russia at this station. The office and bureau with the records are kept here under the charge of Israel Betelli, Manager. There are two long buildings used as dormitories.

Maritime Quarantine Stations.

The Government of Palestine has established two maritime quarantine disinfecting stations to guard against the introduction of quarantinable diseases, one at Haifa and another at Jaffa. These stations are within the purview of the Palestine Health Department. The one at Haifa is on the northern edge of the town, but well located on the beach. There are well constructed barracks sufficient to accommodate five hundred, with plenty of tent space for many more.

All immigrants and three classes of passengers are brought to this station, where they are vaccinated for typhoid and deloused. For this purpose, the capacity is from 80 to 100 per hour.

There is a good steam disinfecting cylinder with formaldehyde attachment; also a room for fumigation with the Clayton furnace or other gases.

The detention barracks are arranged in units supported by wire fences. It is all new and well built. Accommodations are also provided for first and second class passengers should this be necessary.

There is a large dining room with kitchen and necessary arrange-

ments. The entire station is equipped with electric lights, abundant water supply and good arrangements for disposal of sewage.

At the time of our inspection the station was empty, there being no immigration.

At the same station there are special facilities for customs inspection, for the immigration officers and for representatives of the Zionist Executive, as well as for welfare workers.

There is a similar disinfection station at Jaffa.

Quarantine.

Quarantine posts are established at Kantara, Gaza, Haifa, Jaffa, Acre, Ras Elnakura on the Syrian border and Semakh on the Damascus line. These stations are in charge of the government health officer of the district. They are under the direction and supervision of the Health Department of Palestine. Quarantine practice follows the recommendations of the International Sanitary Convention of the League of Nations.

When the railroad to Arabia is finished, many Moslem pilgrims will pass through Palestine and this will add a problem to protect the country against infection, particularly cholera.

CHAPTER 9.

THE GOVERNMENT DEPARTMENT OF HEALTH.

Palestine is governed under a mandate of the League of Nations with Great Britain the responsible mandatory, headed by a High Commissioner.

The usual governmental functions are carried on, headed in the main, by British personnel. The Zionist Executive Organization in Jerusalem is the recognized Jewish Agency for dealings with the governmental authorities.

History of Official Health Service.

The Government Health Service was first formed, after the occupation of the enemy territory by the British in December, 1917, shortly after their entrance into Jerusalem and Jaffa. It was extended into the districts of Haifa, Nablus and Galilee when occupied in 1918. No evidence of what may be termed decent public health service was found at that time.

Organization.

The Organization is headed up by a Director of Health, Colonel G. W. Heron, with

(1) Deputy Director, in charge of hospitals and medical section.
(2) Senior Medical Officer, in charge of sanitary, epidemic and quarantine section.
(3) Assistant Director, in charge of laboratory section.

Health Department Districts.

The Department of Health has divided its work for convenience into four geographic districts, each one in charge of a M. O. H. (medical officer of health), who in turn, has assistant medical officers of health in the various sub-divisions of his own district.

The following are the geographic divisions:

(1) Jerusalem District (Headquarters, Jerusalem), Dr. McQueen in charge.
(2) Samaria and Galilee District (Headquarters, Nablus), Dr. W. Bigger, in charge.
(3) Jaffa District (Headquarters, Jaffa). Dr. Rankine in charge.
(4) Haifa District (Headquarters, Haifa). Dr. Lightbody in charge.

The plan of organization and the division of territory seem practical and should serve to develop good health work in the various districts. It was our privilege during out investigation, to meet all of the district executives, with the exception of Dr. Bigger and Dr. Briarcliffe who were away.

We found the health officials very courteous, affable, well informed, and conscious of necessary services in an adequately functioning public health program. There is no doubt in our minds about their ability to carry on good public health work.

DEPARTMENT OF HEALTH.

HEADQUARTERS SECTION

DIRECTOR

General Administration
New Principles & projects
Finance
Advisory Council
Central Town Planning Commission, etc.

Deputy Director
Medical Section

Government & Voluntary Hospital
Ophthalmic Clinics
Training Schools: Nurses,
Midwives,
First Aid.
Central & District Medical Boards
School Medical Service
Venereal Clinics
Practice of Doctors, Pharmacists,
Dentists & Midwives
Water Supplies
Lunacy & Government Mental Hos.
Maternity and Infant Welfare Centers

Senior Medical Officer
Sanitary, Epidemic & Quarantine
Sections

Sanitary Services Municipalities
Villages
Schools and
Government Buildings
Food and Milk Control
Drainage and Sewerage
Domestic Sanitation, Urban and Rural
Communicable diseases
Vital statistics including
registration of births and deaths
Quarantine Services, Ports & Land
Frontiers

Assistant Director
Laboratory Section

Bacteriology & Pathology
Chemical
Medico-legal specimens
Preparation of vaccines
Analysis Water
Food
Drugs

Medical Stores Section

Inspection of Pharmacies

Sanitary Engineer

Plans & Projects
Public Institutions
Sanitary Reports
Drainage plans
Water Supplies Schemes
Engineering in trades
and industries
Anti-malarial schemes

Insp. of Public Establishments

Government Analyst
and two Palestinian
Medical Officers
Laboratory Staffs

Official Health Budget.

The following are the Department of Health Budget figures for the period 1921-1927:

		Percentage of General Palestine Governmental Budget
1921-1922	£E142,885	7.6
1922-1923	105,368	5.7
1923-1924	93,258	5.7
1924-1925	82,423	5.1
1925-1926	84,481	4.3
1926-1927	96,679	3.9

The budget for 1925 was distributed as follows:

	Revenue	*Expenditure*	
1925-1926	£E9050	A. Personal emoluments	£E63,140
		B. Other Charges ...	21,341
		Total	84,481

Detail of Other Charges.

Travelling and transport	£E4,750
Lighting and heating	1,200
Drugs, Dressings and instruments	3,160
Vaccines and sera	404
Equipment and stores	1,300
Disinfectants and maintenance of disinf. machines ...	1,000
Hospital diets	5,800
Clothing	800
Epidemic outbreaks	500
Medical attendance in private hospitals	200
Relief	175
Contribution to tropical Diseases Bureau	50
Contribution to Colonial Medical and Sanitary Advisory Committee	12
Fees for notifications of births and deaths in villages ...	400
Medical library	60
Contingencies	100
Tentage for Jaffa Quarantine Lazarette	180
Investigation and treatment of syphilis	1,150
Total	£E21,341

Conclusions.

In 1925 the Government expended £E84,481 ($422,405) for a general population of 823,347 people, a trifle over 50 cents per capita. This included the maintenance of hospitals, dispensaries and clinics, and all salaries and expenses incidental thereto.

In order to determine whether the budget is adequate we must take stock and see what public health services are being carried on with the money spent and what necessary health work appears to be lacking.

Attention has already been called in a preceding chapter, to the fact that Palestine possesses one of the highest general mortality and infant mortality rates of any country in the world. It is also quite apparent that incomplete prenatal and infant welfare work is responsible for many deaths in young children.

While only one thousand deaths occurred in the total population comprising Christians, Jews and other people listed under Various, 5,656 Moslem infants died before the age of one year. We recognize the fact that the Moslem woman rebels against male medical service. The tremendous loss of infant lives should stimulate every possible effort in the direction of establishing a maternal and infant hygiene program. The chapter which deals with school hygiene will point out the fact that there is no official service for two-thirds of the school population.

A study of infectious diseases in Palestine reveals the fact that there are inadequate hospital facilities, particularly in Jewish communities, the latter people constituting over seventeen and a half per cent of the total population.

Discussion of the care of the insane in this report points out the markedly insufficient facilities for the care of these unfortunate people. With these very important public health functions lacking, how can one be content with the distribution and inadequacy of the budget now being applied by the Department of Health.

Disraeli considered it the business of the government to conserve the health of the people. Today we live in the established belief that the country's best asset is the health of the population. The principle that much disease and many deaths are avoidable is as applicable to Palestine as to other places in the world, but money must be spent for the prevention of disease, by improvement of the sanitation of the environment, the control of communicable disease, the development of personal hygiene, and the establishment of organization for adequate medical and nursing care.

The report of the Department of Health for 1925 expresses in words a conscious knowledge of the need of the services we have listed as absent, but pleads inadequate funds as the reason for failure to expand. At the same time there is noted a surplus in the general Palestine Treasury for the year of almost $2,000,000. It appears apparent that those entrusted with the responsibility for promoting health and preventing disease, have failed to bring pressure or to plead their case, so that some of this surplus might be applied for the conservation of health and saving of lives.

While the general Palestinian Annual Government Budget has tripled since 1922 (£E881,000 in 1922 to £E2,524,000 in 1926) the health budget has decreased from a percentage of 7.6 of the total money expended by the Government in 1921-1922 to 3.9 of the total money expended in 1926-1927. Five times as much is being spent for police protection as for health. The latter comparative picture is common in other countries. Brief allusion must be made at this time to the health problems in Palestine in order to arrive at an immediate

and justifiable conclusion that much more money must be appropriated for the prevention of disease.

Additional proof of the insufficiency of the budget would appear in more detailed discussion of the various health services in general conditions as this report is read and studied. In passing, we should again like to emphasize our appreciation of the ability of the Health Officers of the Department of Health of Palestine, who we are sure, can develop and carry on an excellent public health program, if given the means with which to do so. This calls for the development of strong local influence and public opinion for official health service, consistent with the duty and obligation of the Government. The Department of Health does not lack ability, but needs money for the improvement of sanitation, anti-tuberculosis work, maternity and infant welfare service, increased hospital facilities for infectious disease and the care of the insane. Municipalities which are able financially to carry on health work should be influenced to do so.

In this instance, while we must expect the people, by taxation, to support their health work, the program must be mapped out and carried on by an arm of the Government, whether it be National, Municipal, or local. A country whose people are in need of health education as well as of preventive health service, must be stimulated by the leadership and initiative of its public health organization until the time when they will evaluate properly the benefits of disease prevention.

Maternity and Pre-School Child Hygiene.

The Government maintains the Princess Mary Maternity Ward in Jerusalem, in connection with the Government Hospital, and has a midwives' training school associated with the maternity ward.

The number of babies born in these wards during the last four years is as follows:

1922	...	55
1923	...	111
1924	...	170
1925	...	196

The number of women trained as midwives as follows:

1922	...	3
1923	...	11
1924	...	9
1925	...	15

Our attention was called to the fact that the Government is endeavoring to stimulate the opening of infant welfare centers in some of the small towns, offering its medical officers for supervision of the work, and permitting the centers to be conducted in Government dispensaries.

The Government is contributing to the maintenance of an infant welfare center in Bethlehem which we visited. Here we saw good infant welfare work carried on. The Government is also financially assisting in the maintenance of the infant welfare clinics at Ramallah.

Excellent pre-natal and infant welfare work is carried on by the Hadassah Medical Organization which work is described under the activities of the Hadassah. We will briefly mention the fact that the Organization rendered pre-natal and post-natal care to 3000 mothers and carried over 3000 babies at their centers.

Good infant welfare work is also carried on by the Plunkett System in Tel Aviv where over 1000 mothers and babies were carried. A description of this System is found in this report under the proper heading.

Conclusions.

Palestine has an infant mortality rate of 188.64 per thousand births, and the Government report points out the fact that the maternal mortality is undoubtedly very high. These few words give a very impressive picture of incomplete and insufficient prenatal and infant welfare service.

We are beginning to accept more and more the principle that infant mortality is an index of health conditions and progress in the field of hygiene in a given country. The enormous reduction in the infant and maternal mortality rate where prenatal and infant welfare work has been carried on in a satisfactory manner, places the burden for the loss of unnecessary lives, squarely upon the shoulders of the government or community which fails to organize itself and give the children a fair chance to be born well.

The report of the Health Department for 1925 states:

"It is gratifying to be able to record that progress has been made in the scheme for extending the scope and number of government maternity and infant welfare centers, and that in the course of the next few years considerable development in this work is to be expected." Let us accept this as a refreshing acknowledgment of an apparent interest and knowledge possessed by the official government, of possibilities in maternity and child welfare, and of its appreciation of the great need of laying the foundation of future good health upon the satisfactory program in the field of maternity and infant welfare.

Preventive work carried on in the field of maternal hygiene and infant and pre-school age service is educational, and has accomplished results in life saving. The Government must sooner or later realize that voluntary agencies cannot be expected indefinitely to carry on preventive work which is a public health obligation of the community and state.

The Department of Health is to be encouraged in what it has been carrying on in the places we have mentioned, but it can very well afford to devote money to the saving of maternal and infant lives.

School Medical Service.

The following are the governmental statistics on school child population of Palestine for 1925:

Governmental Schools	315,	with a school population of	20,000
Non-Governmental Schools	489,	" " " " "	45,000

Jewish School Population in Palestine:

Boys	...	14,207
Girls	...	12,274
Total	...	26,481

The responsibility for the medical service in the so-called non-governmental schools, among which the Jewish Schools are listed, is in almost every instance left to voluntary organization. The Hadassah Organization carries out medical inspection for about 20,000 Jewish school children.

Governmental School Medical Program.

The Government employs school physicians, both male and female.

Duties of the School Physician.

(a) To conduct periodic medical examinations.
(b) To make monthly inspections of the schools and pupils.
(c) To supervise prophylactic eye service and to give treatment in ophthalmia and other prevalent eye diseases.
(d) To give classes of instruction in hygiene to teachers.
(e) To supervise the sanitation of school buildings.
(f) To make special observations of defective children, noting treatment and progress.
(g) To supervise the general hygiene of the curriculum.
(h) To maintain the control of infectious diseases in a school department by excluding from the school, all cases and contacts as made necessary.

Duties of the School Nurse.

(a) Routine daily observation of the school population referred to nurses by teachers.
(b) Daily prophylactic eye treatment.
(c) Minor surgical dressings.
(d) Lectures in general hygiene to children.
(e) Home visits for instruction to parents, and to urge correction of defects.

School Medical Examinations of Children.

We are informed that each child receives a medical examination on three occasions of the school career:

1. Upon entering school.
2. In the middle of the school course, between the ages of 8 and 11.
3. During the last year at school.

The examinations are intended to point out defects, as well as to check incipient maladies.

Sanitation of School Buildings.

No schools can open without permission of the Department of Education and the approval of the sanitary conditions by the Department of Health.

Vaccination of School Children.

Every child must be vaccinated or revaccinated upon admission to school.

Treatment of Malaria.

The medical officer of the district is expected to provide quinine for children with large spleens or showing signs of fever, wherever there is evidence of inability to obtain the same.

Disinfection of Verminous Children.

Children suffering from vermin are expected to have their clothing undergo steam disinfection, and the children must be bathed and given any other necessary treatment. Parents refusing to permit these measures to be carried out are liable to prosecution, and the child is excluded from school.

Control of Infectious Diseases in Schools.

Satisfactory and practical rules for the exclusion of children from school, suffering from contagious and infectious diseases, as well as rules which govern the control and exclusion of contacts, are carried out. There are satisfactory rules which govern the disinfection of school buildings, particularly after a serious outbreak of infectious disease. We are in possession of a series of rules and regulations which govern sanitary conditions in school buildings. These rules are excellent, but we are sorry to report from our observation of several school buildings, that they did not appear to comply with the government rules which we had read.

Conclusions.

We observed the general character of the government school, attended by Arab children only, with Arab teachers, nurses and school physicians.

We accompanied Dr. Kesheshian, who is in charge of the Government School Hygiene Program in Jerusalem. Physical examinations for the year were over and we were therefore unable to see any conducted. We saw satisfactory prophylactic eye treatment carried on by the nurse, and were able to obtain from the doctor the general picture of the work carried on which is quite similar to medical inspection in other countries.

We studied the physical record card used, and found listed the typical questions used on school examination cards in the United States, intended to point out the physical condition of the child at the conclusion of a satisfactory examination.

The sanitary condition of some of the school buildings visited by us can be materially improved.

The ophthalmic treatment which is carried on in the schools, is extremely important as a tremendous population of the Arab school population suffers from trachoma. The governmental report of 1925 calls attention to the fact that sixty per cent of the school children suffer from trachoma.

As we went around the schools and saw many of the children, that percentage seemed very high, but we believe it was much higher than the ten per cent claimed by Dr. Kesheshian.

The Government schools are overcrowded, leaving no possible room for Jewish children if they desire to attend. The Government has provided no school facilities for Jewish children. We can therefore see no reason why the government should not provide school medical service for the children of the resident population, thereby developing a standard school medical program for Palestine.

While we cannot speak too highly of the excellent and necessary medical service rendered by the Hadassah, which is described under that heading, we feel strongly that this work should be replaced by something equally good under official direction or, at least, that the burden of supporting the same should be placed upon the official government, who should consistently furnish school medical service for all school children.

Table of Governmental School Hygiene.

Lectures to Teachers.

	Town Schools	*Village Schools*	*Total*
No. of hygiene lectures by M. O. to teachers	35	136	171
No. of teachers attending lectures ...	342	275	617
Medical Inspection of Pupils.			
No. of children medically examined	5,024	7,433	12,457
" " " with trachoma ...	2,859	5,771	8,630
" " " " other eye diseases	519	63	582
" " " " defective vision	212	478	690
" " " " verminous head or body ...	249	473	722
" " " " 4 or more teeth badly decayed	98	68	166
" " " " enlarged spleen	193	428	621
" " " " heart disease ...	14	21	35
" " " " lung affections	37	11	48
" " " " tuberculous disease ...	34	2	36
" " " mentally defective ...	2	7	9
" " vaccinations performed ...	1,595	812	2,407
" " children treated for malaria ...	316	551	867
Ophthalmic Treatment			
No. of attendances for treatment for Trachoma	527,691	523,102	1,050,793

Government Hospitals and Dispensaries.

For a few years after the British occupation of Palestine, the great need for medical relief, a direct result of the War conditions, necessitated the opening of sixteen government hospitals.

The reopening of the voluntary hospitals, closed during the War, caused the government to reduce the number of government hospitals as follows:

1922	Government	Hospitals	12	Beds	387
1923	"	"	11	"	375
1924	"	"	7	"	228
1925	"	"	4	"	155

At the beginning of 1925 there were only four hospitals entirely supported by the Government, although they were still taking a part in the maintenance of four other hospitals.

As a number of the hospitals taken over (originally) by the Government were municipal institutions before the War, it has been the policy of the Department of Health that these hospitals should be returned to the municipalities although remaining subject to governmental regulations for the maintenance of standards.

The most reliable data which we could assemble appeared to show that there were 39 hospitals in Palestine divided as follows:

Government and Municipal	8
Private	31
Total	39

Dispensaries and clinics divided as follows:

Government and Municipal	19
Voluntary	44
Total	63

Bed Strength.

Government and Municipal	230
Christian	1,077
Jewish	600

Government and Municipal Hospitals—1925.
General and Infectious.

			Bed Strength
Jerusalem	Government	Hospital	80
Haifa	"	"	25
Tulkarem	"	" (closed Feb. 1925)	20
Acre	Municipal	Hospital	15
Nablus	Watan	... ...	25
Jaffa	Municipal	"	40
Gaza	"	"	18
Beersheba	"	"	8
		Total	231

The government and municipal bed strength are about 15% of the total.

Number of patients admitted to hospitals in 1925:

Jewish Hospitals	10,776
Non-Jewish Hospitals	12,630

Number of patients admitted to government and municipal hospitals in 1925:

Non-Jewish patients	3,944
Jewish	498

Number of patients admitted and treated at government and municipal hospitals in the past five years:

1921	6,602
1922	6,646
1923	4,905
1924	4,442
1925	3,939

The Government holds itself responsible for rendering medical service to police, gendarmes, railway and other government employees, and Royal Air Force personnel. It also holds itself responsible for the hospitalization of major infectious diseases such as cholera, smallpox, typhoid fever, assuming the course of construction and maintenance of isolation wards necessary to provide a given part of beds for different areas of the country. While this isolation of wards may form a function of the municipal hospitals, they are, nevertheless, under the control of the government which intends to maintain administrative control of the arrangements under which dangerous epidemic diseases are isolated and treated.

The following is the approximate budget for the maintenance of government hospitals:

Jerusalem: Bed strength about 80. Budget approximately £E3,331.

Maternity Center, Jerusalem (which is a part of the hospital): £E601.

Beersheba Municipal Hospital: Bed strength 8. Charges borne by the government £E806.

Municipal Hospital, Jaffa: Bed strength 40. Expenses borne by the government £E1,279.

Cost of living, allowances, general charge not included in the department budget.

Gaza Municipal Hospital: Bed strength 18. Charges borne by the government £E845.

Government Hospital, Haifa: Bed strength 25. Charges borne by the government £E1,573.

Municipal Hospital, Acre: Bed strength 15. Cost of living allowance not included in above budget.

Nablus, Watan: Bed strength 25. Cost to government—cost of living allowance.

Government Dispensaries.

The last annual governmental report calls attention to the maintenance of 14 government dispensaries and five medical instruction rooms and a number of village clinics.

In the following table are given the locations of the government dispensaries and the number of their patients:

Location	*Total number of attendances*
Jerusalem Dispensary	10,902
Ramallah "	230
Hebron "	6,481
Beersheba "	15,646
Jaffa	7,501
Ramleh	26,142
Gaza	13,230
Majdal	2,323
Haifa	12,585
Acre	3,456
Tulkarem	71,315
Nablus	36,139
Jenin	3,899
Beisan	3,145
Kantara Railway Medical Inspection Room ...	4,093
Nazareth Medical Inspection Room	760
Tiberias " " "	897
Safed " " "	254
Bethlehem " " "	283
Total	219,281

Conclusions.

The Government claims to have committed itself to a policy of devolution whereby the burden for the maintenance of hospitals shall be borne by various municipalities and communities. It, nevertheless, acknowledges its responsibilities for the maintenance of beds for infectious diseases, as well as for the care of the various British official personnel already listed. In its acknowledgment of responsibility for the maintenance of beds for the care of infectious diseases it also says that they shall be distributed in the various sections of the country. Epidemics of typhoid fever have always shown an insufficient number of hospital beds and improper distribution of same.

An analysis of the table giving the number of patients admitted to hospitals reveals the fact that about eleven per cent of the people treated in the government and municipal hospitals were Jewish. In the City of Jerusalem where the Jewish people constitute sixty per cent of the population only nine per cent of the 1,200 people receiving treatment in government and municipal hospitals in 1925 were Jewish.

In discussing this condition with physicians, nurses, public health employees, as well as the Jewish community, we were informed that the reason for this great disproportion and apparent reluctance for Jewish treatment in government and municipal hospitals is due to the fact that the physicians, nurses and attendants employed in these institutions are non-Jewish, usually Arabs. It would seem that the remedy to this situation lies in the readjustment of the staff, at least based upon the type and percentage per person of the population living in the community where a hospital is situated.

It is significant to note that there are no government hospitals in Jewish communities outside of Jerusalem where the hospital attendance is so lightly Jewish. It is also important to note that there are no government dispensaries in Jewish towns and villages. It would seem the duty of the government to equalize its service, furnishing a proportionate amount to 17 plus per cent of the population of Palestine.

The Hadassah and Kupat Cholim, between them, care for about forty per cent of the bed patients of all hospitals in Palestine.

Italian, German, English and other mission hospitals are located in Jerusalem. The historic and sacred reaction in favor of the Holy City apparently were responsible for placing these institutions there. They are doing excellent work when called on, but many have empty beds while others are overcrowded. Other sections of Palestine have an insufficient number of hospital beds and this unequal distribution is responsible for much hardship.

While the government cannot do much about an over supply of hospital beds in a community, it would seem to be its duty to provide community hospital needs.

The Hadassah, the largest voluntary medical organization, maintains a series of hospitals and dispensaries which are described in the section of the report dealing with the work of the Hadassah.

The Kupat Cholim are also described in another section.

Mental Diseases and the Care of the Insane[1].

The Government maintains a 63 bed insane asylum (34 male and 29 female) in Bethlehem, a short distance out of Jerusalem. The institution is crowded but clean, and the patients apparently receiving satisfactory care.

Industrial Hygiene and Control of Trades and Industries[2].

Since 1919 industries engaged in trades which have a relation to public health have been licensed by the Department of Health with much resulting improvement. These licenses are renewed from year to year, and applications are forwarded by the local municipal organization to the office of the Department of Health.

Inspections are made by representatives of the medical officer before new licenses are issued, and the conditions studied are: premises, construction, sanitation, general conduct of the trade, etc. Among those industries which fall within the province of this regulation are: public baths, aerated water factories, sugar refineries, soap making, preservation of fish and meat, sugar making, slaughter houses, ice factories, public markets, hotels and lodging houses, restaurants, bars and cook shops, dairies, confectioners, fish shops, ice cream shops, poultry shops, distilleries and breweries, and any other establishment, trade or store house of products which may be detrimental to public health.

The above industries are subject to special rules and regulations governing their conduct.

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[1]A detailed description is found under Mental Diseases.

[2]See also Industry, and Food and Diet.

Regulations Governing Slaughter Houses.

Under the 1926 ordinances concerning the diseases of animals, enacted in 1926, every municipality or local council shall provide public slaughter houses, constructed and equipped in accordance with plans and specifications, receiving the approval of the director of the Department of Health and the chief veterinary officer.

An ordinance relating to diseases of animals, gives the authorities the control over this phase of the work, which is supervised by veterinary officers appointed by the High Commissioner and listed as a Government Veterinary Officer.

In towns of 10,000 or more veterinary surgeons, and in towns of less than 10,000 meat inspectors working under the supervision of veterinary surgeons, are appointed by the municipality or local council, subject to the approval of the chief veterinary officer, to conduct a public slaughter house and inspection of all animals and carcasses destined to be used for food.

A series of rules and regulations have been drafted for the purpose of controlling the slaughtering of animals to be used for food.

The Practice of Medicine, Pharmacy, Dentistry and Midwifery.

A good word may be said at this time for the Ottoman Law which did not permit unqualified practice in any of the above professions.

Approximately 600 physicians are practicing in Palestine. Irregular practice is brought before the courts and no unqualified practice permitted knowingly.

Rules and regulations are enforced governing the practice of pharmacy and dentistry.

Midwives are registered and granted a certificate. Those not registered are not permitted to practice. 57 trained in 1925.

Obtainable figures point out the fact that over 1,300 women were registered as midwives with very few of them being able to read or write.

Training of Nurses and Nursing Service.

The first regulations for the training of nurses in Palestine were issued in 1919, since which time over 100 have completed their training and passed examinations for nurses' certificates.

Nursing training in Palestine is according to two systems, British and American. The former is followed in the government municipal and British Mission Hospital, the latter in the nurses training school of the Hadassah Medical Organization.

In both cases the government regulations for training of nurses are followed. Pupils, at the end of their training, are required to pass an examination, and those receiving their instructions in English take these examinations in that language, and the ones of the Hadassah Medical Organization are examined by that group, in view of the fact that they receive their instructions in Hebrew.

It has been the custom in the past for each training school to issue its own graduation certificate which is endorsed by the Director of Health, the nurse being registered as a graduate nurse.

The following shows the number of nurses receiving certificates:

	1921	*1922*	*1923*	*1924*	*1925*	*Totals*
Government and Municipal Hospitals	0	1	6	8	5	20
Church Missionary Society's Hospitals	0	5	1	2	2	10
Scottish Mission Hospital	0	0	0	1	1	2
London Jews Society Hospital ...	2	0	0	0	3	5
St. Luke's Hospital	0	0	0	0	1	1
Hadassah, Rothschild Hospital ...	13	23	7	8	13	64
	15	29	14	19	25	102

The following number of pupil nurses successfully completed their examinations during 1925:

	1st Year	*2nd Year*	*3rd Year*
Government and Municipal Hospitals	5	3	5
Church Missionary Society's Hospitals	5	3	2
Scottish Mission Hospital	0	5	1
Edinburgh Medical Mission Hospital	2	0	0
London Jews Society Hospital	1	2	3
St. Luke's Hospital	2	0	1
Hadassah, Rothschild Hospital	21	12	13
	36	25	25

GOVERNMENT AND MUNICIPAL AND VOLUNTARY HOSPITAL NURSING STAFFS, 1925.

	Bed Strength	*Matrons*	*Trained Nurses*	*Nurses under Training*			*Nurses not Under training*	*Totals*
				1st Year	*2d Year*	*3d Year*		
Government and Municipal Hospitals ...	261	6	17	15	5	3	19	65
Voluntary Hospital Organization								
Hadassah Medical Organization	331	4	41	39	21	12	62	179
Church Missionary Society	178	5	4	8	5	3	2	27
Kupat Cholim (Jewish Med. Organ.) ...	97	3	4	0	0	0	7	14
Tutors and Protectors of the Jewish Community in the Holy Land, Amsterdam	53	1	2	0	0	0	0	3
Misgab Ladach (Private Donation)	34	1	2	0	0	0	4	5
Bicur Cholim Society	70	1	0	0	0	0	19	20
Italian Hospital, Jerusalem	60	1	13	0	0	0	0	14
London Jews Society	62	1	4	3	1	2	0	11
The Order of St. John of Jerusalem in England	45	2	0	0	0	0	2	4
International Moravian Church, London ...	30	1	4	0	0	0	0	5
German Temple Society (Jaffa)	20	0	1	0	0	0	0	1
Jerusalem and the East Mission	32	1	1	2	2	0	0	8
Italian Association, Haifa	30	1	2	0	0	0	0	3
St. Charles Congregation (Haifa)	25	1	5	0	0	0	6	12
Edinburgh Medical Mission Society	40	1	1	2	2	0	2	8
United Free Church of Scotland	60	1	4	1	0	5	0	11
German Deaconess Hospital, Jerusalem ...	50	1	6	0	0	0	6	13
Ezrath Nachim Women's Society Home for Insane and Incurable	50	0	13	0	0	0	3	16
French Hospitals	360	5	27	0	0	0	16	48
TOTALS, Voluntary Hospitals	1,627	31	134	55	31	22	129	402

Laboratory.

The Department of Health maintains a central laboratory in Jerusalem, with a personnel of 16 which include a senior officer in charge, a government analyst and an assistant analyst, two senior assistants, three junior assistants, one medical officer, two on the clerical staff, four cleaners and a messenger, one stable man and a medical officer.

All examinations, medical, legal and public laboratory work are carried on. Various vaccines are prepared and given out. Calf lymph is prepared and distributed.

Chemical analyses of various food products are carried out.

The Government reports call attention to 17,765 bacteriological examinations during 1925 under which are listed one blood film, two blood examinations, 3,138 bacteriological specimens, 4 serum reactions, 5 urines, 6 sputa, 7 faeces, 8 pharyngeal swabs, 9 urethral smears, 10 cerebro-spinal fluids, 11 rabies (microscopic examination of brain from supposedly rabic animals).

From time to time laboratory investigations were carried on at the request of the legal authorities.

Examination of water and milk,
Examination of alcohol and alcoholic liquors,
Examination of viscera poisons,
Examination of drugs and disinfectants.

Quarantine*.

General medical surveillance has been carried on at the quarantine establishments at Haifa and Jaffa, which have been severely taxed in the past few years owing to increased immigration.

The report for 1925 called attention to the following facts:

6,768 people temporarily detained on arrival
48,494 disembarking persons examined
31,467 immigrants examined

Anti-typhoid inoculations were given to immigrants. People were subjected to careful medical surveillance, both at ports of entering, and in connection with the Pilgrimage to Mecca, which was regulated by passports and booklets, which included certificates of identification, vouchers for journeys, etc.

3,466 vessels were visited for health inspections in 1925, resulting in the temporary detainment of 6,768 people.

Medico-Legal Examinations.

Medico-legal examinations are carried on by the Government Medical Officer at the request of the police. It is claimed by the Government that over 5,000 such examinations were carried on in 1925.

Prison Medical Service.

There are two central prisons at Acre and Jerusalem containing

*Discussed in detail in Chapter VIII devoted to Isolation, Immigration, and Quarantine.

about 730 prisoners as well as two jail labor camps with 450 prisoners. In addition to the above there are a number of small lockups, and the Howard Home in Jerusalem contains about 25 juvenile prisoners. The government is responsible for the medical care of the above group. Tuberculosis has been a serious problem in the prisons.

Control of Dangerous Drugs.

On July 15, 1925, the dangerous drug ordinance came into force which provides "for the control of the cultivation, importation, exportation and possession of certain dangerous drugs." This will bring local law into conformity with the Geneva International Opium Convention.

CHAPTER 10.

JEWISH HEALTH AGENCIES.

The Hadassah Medical Organization.

The Hadassah Medical Organization started its work in Palestine in August 1918, as the American Zionist Medical Unit. Its work has grown, broadened and developed into a medical service, with hospitals, clinics, medical inspection of school children, the suppression of trachoma, the control of malaria and a variety of health activities. Under the admirable and noble guidance of Miss Henrietta Szold, Hadassah has expanded until it now operates on a budget of almost $750,000 a year, contributed in the main by the Women's Zionist Organization. In view of the fact that Hadassah is the chief philanthropic agency to look after the health work of the Jewish people in Palestine, we made a special study of its activities, its budget, its program, its personnel and its policies. We also studied and report upon its achievements, its shortcomings and its relationships. Hadassah has served a useful purpose, is doing good work and is alive to the possibilities of doing still better work in the future.

Organization.

The control rests in the hands of a Governing Board, composed of representatives of the Zionist Organization of America, the Keren Hayesod, Hadassah the Women's Zionist Organization, representatives of the American Jewish Physicians' Committee, and members at large.

The organization is headed in Palestine by a Director, appointed by the Governing Board, to which he is responsible.

He has a General Advisory Board and a Medical Advisory Council.

Advisory Board.

The General Advisory Board is composed of lay residents of Palestine, among whom are listed two representatives of the Palestine Zionist Executive. The following is the personnel of the Advisory Board:

Mr. Julius Berger of the Keren Kayemeth

Mr. C. Q. Henriques, Engineer to the Palestine Zionist Executive

Mr. Jacobus Kann, Honorary Dutch Consul

Mr. Harry Sacher, Barrister-at-law.

Medical Advisory Council.

The Medical Advisory Council is composed of the heads of the various departments of the Hadassah Medical Organization as follows:

Chief Physician for Diseases of Children
Chief Ophthalmologist
Head of the School Hygiene Department

To this number it is planned to add such additional heads of departments as are appointed in the organization.

Headquarters.

The general headquarters of the Hadassah Medical Organization are in Jerusalem, and district headquarters are located in Jerusalem, Tel Aviv, Haifa, Safed and Tiberias. Each district is headed by a physician who acts as the local Deputy Director.

The Nursing Departments, Health Welfare Departments, School Hygiene Departments and others have their central offices in Jerusalem and are headed by the chiefs of the departments.

Activities of the Hadassah Medical Organization.

The activities of the Hadassah Medical Organization may be divided into three distinct services:

(a) *Care of the Sick.*

This work is carried on in the Hadassah hospitals, outpatient departments and to a limited extent, in the homes of patients. Under this division may be listed rural medical services.

(b) *General Health Work.*

Under this heading is listed prenatal and post natal care, midwifery service in the homes, district visiting nursing, infant welfare, care of the pre-school age, school hygiene, anti-tuberculosis and anti-trachoma campaigns, and immigrant service.

(c) *Education and Research.*

Under this heading may be listed educational courses for physicians and nurses in cooperation with the Hebrew University.

Hospital Service.

The Hadassah Medical Organization conducts four hospitals in Jerusalem, Tel Aviv, Haifa and Safed, with a combined bed capacity of 367.

Jerusalem.

The Rothschild Hospital in Jerusalem is placed rent free at the disposal of the Hadassah by Baron Rothschild, who also contributes

about £E2,000 annually towards its maintenance. It has 121 beds, with the following departments: Internal Medicine, Surgery, Gynecology, Obstetrics, Ophthalmology, and Diseases of Children. It also provides beds for neurological, dermatological, nose, ear and throat and other special conditions as they arise.

The number of patients treated in 1926 was:

adults	3,538
infants	522
total	4,060

These patients received a total of 43,517 sick days, over 80% receiving free treatment.

Tel Aviv–Jaffa.

The Hadassah maintains 130 beds in Tel Aviv at the present time, centered in four different rented buildings. This condition will be remedied when the new hospital building now being built is completed. This hospital serves a population of approximately more than 50,000 and has departments of Internal Medicine, Surgery, Pediatrics, Obstetrics, Ophthalmology, Gynecology and Neurology.

The following number of patients were treated in 1926:

adults	2,878
infants	941
total	3,819

These patients received a total of 43,469 sick days, 75% of them being treated free.

Haifa.

The Hadassah maintains a fifty bed hospital in Haifa in a rented building, conducting departments in Internal Medicine, Obstetrics, Gynecology and Pediatrics. Beds are available for minor surgery and ophthalmology as necessary.

The following number of patients received treatment in 1926:

adults	1,827
infants	254
	2,081

This group received a total of 19,267 sick days. The large majority were free patients.

Safed.

A 66 bed hospital is maintained by the Hadassah in Safed, in a building placed at the disposal of the Organization by the Rothschild family.

In view of the favorable climate thirty beds in this institution are

set aside for the care of the tuberculous. The rest of the beds are devoted to Internal Medicine, Obstetrics and Pediatrics.

The following number of patients were treated in 1926:

adults	996
infants	85
total	1,081

The total number of sick days, 19,975, a majority of them receiving free treatment.

Tiberias.

Negotiations are being carried on for the turning over of the 31 bed Schweitzer Hospital, now being built in Tiberias. Patients are now sent from Tiberias to the hospital at Safed.

Summary of Hospital Service in Palestine in 1926.

Total number of patients treated	10,041
Total number of sick days	126,228

Over 75% of patients treated free.

Per Capita Cost of Patients Per Day by Hospitals.

Jerusalem	61.9	Piasters
Tel Aviv	50.9	"
Haifa	54.9	"
Safed	44.1	"

Variation in per capita cost is attributed to a number of factors, among which may be listed, rent, laboratory and X-ray service and specialized full time salaried staffs in the hospitals and outpatient departments.

Outpatient Departments in the Cities.

The Hadassah Organization maintains outpatient departments in Jerusalem, Tel Aviv, Haifa and Safed, in connection with its hospitals in the above cities and at Tiberias.

Jerusalem.

The Outpatient Department is housed in a rented building and has clinics for internal medicine, surgery, obstetrics, gynecology, pediatrics, tuberculosis, dermatology, ophthalmology, neurology, physio-therapy.

In 1926, medical services were given to	23,569
Total number of visits to clinics	117,231

Tel Aviv.

The Outpatient department is maintained in a rented building and conducts clinics in internal medicine, surgery, gynecology, diseases of children and neurology.

In 1926, 17,329 patients made a total of 83,319 visits.

Haifa.

An outpatient department is being maintained in a rented building with clinics in internal medicine, obstetrics, gynecology, pediatrics and minor surgery.

In 1926, 15,264 new patients made a total of 59,505 visits.

Safed.

An outpatient department maintained in a rented building with clinics in internal medicine, ophthalmology, pediatrics, obstetrics, and minor surgery.

In 1926, 3,606 new patients made a total of 46,240 visits.

Tiberias.

A dispensary is maintained in a rented building with clinics in internal medicine, ophthalmology and pediatrics.

In 1926, 16,230 new patients made a total of 96,574 visits.

Pharmacies are maintained in the Hadassah clinics in the cities and in many of those in the colonies.

Laboratories.

Routine laboratory work in connection with the hospitals and outpatient departments are done in the laboratories of the Hadassah in Jerusalem, Tel Aviv, Haifa, Safed and Tiberias.

A comprehensive laboratory program which includes pathology, bacteriology, serology, bio-chemistry, and radiology is carried on in Jerusalem, to be placed under the guidance of Professor Kligler of the Hebrew University.

Bacteriology and clinical microscopy are carried on in Tel Aviv, Haifa, Safed and Tiberias.

In some of the districts the service of the laboratories are at the dispensary of the Palestine Government and other institutions.

The finest roentgenological institute in the Levant is a source of X-ray service to many organizations and individuals besides that of the Hadassah Medical Organization.

Rural Health Service.

The rural health service of the Hadassah is administered from the cities which serve as the district headquarters with the following divisions:

Jerusalem.

Hebron, Kfar Shiloach, Artuf.

Tel Aviv (Judea).

Herzliah, Machno Johuda, Ain Ganim, Raanana, Magdiel, Kfar Saba, Ain Hai, Boor Tuvia, Ekron, Hulda, Shaaraim, Shivat Zion, Gaza and Ramleh.

Haifa (Samaria and Valley of Jezrael).

Afule, Balfouria, Nachliel, Acre, Givat Ada, Benjamin Maier Shfeye, Bet Shean, Kfar Yeladim, Manor-Jadda.

Tiberias (Lower Galilee).

Monhamia, Yavniel, Bet Gan, Kinneret, Sarona, Hittim, Ilania (Sodjera), Mizpeh, Magdiel, Kfar Tabor.

Safed (Upper Galilee)

Metullah, Tel Hae, Kfar Giladi, Yessod Hamaaleh, Mishmar, Hayarden, Ayelet Hashachar, Rosh Pinah, Pekiin.

Consequently other rural settlements which are not listed above receive partial service from the Hadassah, and in other places medical service is furnished as a joint effort of the Hadassah and Kupat Cholim.

The services of the full- or part-time physician in the various little settlements and small towns are in accordance with the following methods:

(1) Physicians may be employed on full time basis, receiving a full salary from the Hadassah, and the local town council, in which event they have no right to conduct private practice.
(2) Physicians may be employed on a part time basis serving the Jewish population without charge and being permitted to carry on private practice among the Arabs.
(3) Physicians may be employed by the Hadassah to carry on a special piece of work or having the right to private practice among the Jews and Arabs.
(4) Ophthalmologists are employed to make occasional visits giving treatment and instruction in the care and prevention of eye disease.

36,065 new patients in the clinics made 602,485 visits to the various rural dispensaries, where in addition to general treatment and laboratory service, drugs were sold at cost.

The local communities are expected to contribute to the cost of the medical service, contributions, varying from 5% to anywhere from 60% to 90% in the more flourishing clinics. The counties are also expected to furnish housing for the clinics.

Child Health Welfare Department.

A complete child welfare program is carried on at 16 welfare centers conducted in the following places:

Jerusalem	6	Rehoboth	2
Haifa	3	Petach Tikwah	1
Tel Aviv	2	Ain Ganim	1
Tiberias	1		

Approximately 3,000 babies are under the supervision of the above clinics. Of this group about 1,800 are in Jerusalem and 1,200 in the other districts.

The medical personnel functioning in connection with this service is under the direction of Dr. Greenfelder, a very able and conscientious pediatrician. The routine technique followed at the conferences is of the same type and standard as those followed at the good infant welfare clinics carried on in the United States.

The nurse is instructed to treat the family as a unit. This includes the expectant mother, infant, pre-school and school child, as well as the provision of anti-trachoma and anti-tuberculosis advice. This is in accordance with the latest accepted principle of generalized nursing.

The health centers are open daily except Saturdays and holidays, with the nurse on duty from 7:30 in the morning until noon, when mothers may come for advice, instruction, demonstration, etc.

Infant welfare clinics are held twice weekly, with a doctor in attendance. A pre-natal doctor conducts a clinic weekly.

The following statistical information for 1926 is of value in a study of this important and excellent work:

Expectant mothers treated at centers 3,210.

Of this group 855 were delivered at Hadassah hospitals and 577 by Hadassah trained midwives.

Number of visits to the Health Welfare Centers during 1926:

mothers	12,626
infants	34,143
total	46,769

Examinations made by physicians at the Centers during 1926:

mothers	5,576
infants	8,299
total	18,875

Visits of nurses to homes during 1926:

mothers	12,750
infants	22,050
total	34,800

A most generous contribution of Nathan Strauss has made possible the planning of a modern health center in Jerusalem, the corner stone of which was recently laid, with most impressive ceremonies, the donor and the High Commissioner gracing the action with their presence.

The center has been aptly named "The House of Health," and will be devoted to carrying out a complete preventive program, in addition to which, one of the Strauss soup kitchens will function, as well as clubs for boys and girls, etc.

Milk Kitchen (A Drop of Milk).

One in Jerusalem and one in Haifa.

Mothers are taught to prepare milk formulas in accordance with the instructions of the health center doctor.

For mothers unable to prepare milk formulas because of economic or social conditions, the formula is prepared in the milk kitchen, small fees being charged, in accordance with the financial status of the family.

A visit to the milk kitchens where milk is pasteurized and distributed to about 90 mothers in Jerusalem, disclosed a well ordered establishment.

We found this work carried on in an excellent manner and, needless to say, contributes materially to the diminished mortality among expectant mothers and babies reached by these clinics.

Home Visiting Nursing.

A system of home visits by nurses and physicians was initiated in Tel Aviv during the past year by Hadassah, in cooperation with the Jewish Physicians' Association, for needy patients who could not be received at the hospital and who were physically unable to go to the outpatient department. The Joint Distribution Committee furnished £E100 a month for six months to cover the cost of the home visiting service and of free medicines. Funds from this grant were also used by Hadassah to pay for free patients referred to the clinic for laboratory and prescription service. It is hoped that Hadassah will be able to carry this work forward with its own funds in the new budget year.

In Safed and Tiberias, Hadassah physicians pay as many home visits as possible to needy patients, while in the colonies both physicians and nurses make home visits a part of their regular activities.

School Hygiene.

The school hygiene division of the Hadassah Medical Organization carries on work in 228 Jewish Schools in the following cities as well as 64 rural settlements with 22,619 pupils.

Pupils requiring special care and treatment are referred to the Hadassah hospitals and clinics maintained for school children.

Vaccination against typhoid and smallpox is a routine, and careful attention is given to children suffering from diseases of the eyes, skin and scalp, 29 specially trained nurses being engaged in a campaign against trachoma.

Over 40% of all pupils in the Jewish Schools were suffering from trachoma when the school program was first put on in 1918 and 1919. This has been reduced to 10.2%.

Infectious diseases of the skin have practically been eliminated among the school child population supervised by the Hadassah.

Dental Work.

The dental clinic is maintained in Tel Aviv, work being carried on in cooperation with the Jewish Dental Society of Tel Aviv. Here school children are examined and given treatment.

The Pirquet tests for tuberculosis are given to children from three to ten years of age.

Specially trained Health Welfare nurses work under the direction of

the physicians of the Department. With the cooperation of the teachers, they give classroom lessons and practical demonstrations in personal, school and household hygiene. Physicians and nurses cooperate with the teachers in charge of domestic science classes in seven schools where pupils' luncheons are prepared, the Hadassah paying for these luncheons.

School Medical Service.

Approximately 23,000 school children receive excellent school medical service from the Hadassah organization. These children are distributed approximately as follows:

7,000	children	in Jerusalem
7,000	"	" Tel Aviv
2,000	"	" Haifa
600	"	" Safed
800	"	" Tiberias
5,000	"	" the colonies
800	"	" Petah Tikvah
23,200		

The granted budget for this work for the period of 1926 to 1927 was £E7,486.50. This work is under the direction of Dr. Brachjahu, with the following organization:

Five doctors, distributed as follows:

2 in Jerusalem
2 in Tel Aviv
1 in Haifa

Five school nurses, distributed as follows:

3 in Jerusalem
2 in Tel Aviv

Medical Duties.

Dr. Brachjahu supervises the medical work at the seminary (normal school), teaching the pupils hygiene, as well as looking after their physical condition.

The school physicians conduct periodic physical examinations, some of which we observed, done in an efficient and thorough manner, using blanks typical of those used in other countries, to carry on effective school medical inspection.

The work of these physicians extends among those adults attending the advanced Hebrew schools. There are about 50 Hebrew schools in Jerusalem. While each child has a physical examination, only six of these schools have nursing supervision.

The cisterns of all schools are examined at the end of the rainy season, the water chlorinated when necessary, and constant watch kept for impurities. Sanitary conditions in the school buildings are under observations, and whenever possible, corrections are secured with the aid of the Public Health Department.

Conclusions.

About 20,000 children attend the government schools in Palestine and receive governmental medical supervision. About 23,000 children attend the Jewish schools and receive medical supervision from the Hadassah.

The fact that government schools are overcrowded, leaving no possible room even for some Arab children, precludes all probability of space for Jewish children, should they elect to attend. We can see no valid reason why the government should furnish school medical service for a certain part of the population, apparently regarding that school hygiene is important and necessary, and should do nothing for another distinct group which comprises over one-third of the school population. We cannot agree with the governmental attitude that Hebrew schools be classed as private.

It does not jibe with the Balfour declaration, which endorsed the establishment of a Jewish Homeland. If Palestine is a Jewish Homeland, then the Hebrew schools are public, and if they are public, they are entitled to an equal service with any other class of population.

We are mindful of the splendid work carried on by the Hadassah in this field but this service should be regarded as closely linked with education, an obligation of intelligent government.

Anti-Trachoma.

An intensive anti-trachoma campaign is carried on in the schools, hospitals and outpatient departments of the Hadassah, as well as in a special Hadassah eye clinic in the old city of Jerusalem. Intensive anti-trachoma work is carried on in the rural districts, an eye surgeon frequently visiting the clinics.

Specially trained nurses working under the supervision of the physicians, treat the school children suffering from trachoma.

Anti-Tuberculosis.

The Hadassah Medical Organization carries on an Anti-Tuberculosis Campaign in the following ways:

1. General work in all Hadassah hospitals and outpatient departments.
2. Special Tuberculosis Ward in the Hadassah hospital at Safed, which contains 30 beds.
3. Home Visiting Nursing for Tuberculosis Patients.
4. Instructions in the care of tuberculosis patients in the School for Nursing.
5. Tuberculosis Clinics in Jerusalem and Tel Aviv, conducted in cooperation with the Anti-Tuberculosis League.

Hadassah contributes about £E600 a year toward the Tuberculosis Clinics in Jerusalem and Tel Aviv, which covers services of nurses, rent, prescriptions, linens, equipment, housekeeping, etc., while the Anti-Tuberculosis League provides various forms of social service, such as patients' rent, food, traveling expenses to the Safed Hospital of Hadassah, etc.

It is clear that only a beginning has been made to combat the great problem of tuberculosis in Palestine.

Immigrant Service.

The Zionist Immigration Stations at Tel Aviv and Haifa have at their disposal the services of Hadassah physicians and nurses. All who arrive on Zionist certificates receive free medical attention and medicines as long as they remain at the Immigration Stations.

With the decrease of immigration during the last year and a half, the medical service of the Hadassah Medical Organization at the two Immigration Stations has been correspondingly reduced.

Education and Research.

The report of the Hadassah Medical Organization calls attention to the provision of the following courses for the education of physicians on its own staff as well as others:

1. A two-year course for house physicians.
2. A three-year course for those who have completed the previous one and who wish to specialize in pediatrics, gynecology, etc.
3. Special educational facilities for private physicians who come to observe in the various departments.

School for Nursing.

A school for nursing is maintained by the Hadassah with 76 pupil nurses now in training, and a record of having graduated 73 up to December 1926.

Orderlies.

Provision for the training of male orderlies has recently been instituted.

Personnel.

A paid staff of the Hadassah Medical Organization includes 643 persons, divided as follows:

80 physicians.
257 nurses.
76 pupil nurses.
230 administrative, clerical and miscellaneous.

The Hadassah Medical Organization has committed itself to the policy of endeavoring to obtain skilled and eminently fitted specialists on its staff to take charge of the various departments listed in the field of medicine.

Relations to Other Organizations.

The Hadassah has cooperated in various ways with other health and welfare organizations:

1. *Department of Health.*

Many functions which may have been regarded as public health problems, nominally the obligations of the Department of Health, have been carried on in the past by the Hadassah Medical Organization.

Campaigns against typhoid which have included hospitals as well as vaccination, have been joint efforts of the Hadassah Medical Organization and the Department of Health.

2. *Kupat Cholim.*

The increased medical activities of the Kupat Cholim have necessarily raised the problem of relationship with the Hadassah. This we will discuss later.

Various agreements have been drawn between these organizations whereby the Kupat Cholim pays for the medical treatment of its members in Hadassah hospitals on a collective basis in accordance with the tariff of the Hadassah. The majority of the Kupat Cholim patients are treated free.

3. *Hebrew University.*

Varied cooperative plans are in the process of formation with the object in mind of promoting public health education, providing opportunities for research, and the raising of medical standards.

4. *Jewish Hospitals in Jerusalem.*

The laboratory and consultant services of the Hadassah Medical Organization is at the disposal of the Jewish Hospitals of Jerusalem. Linens collected by the Hadassah, the Women's Zionist Organization of America are at the disposal of the hospitals through the Hadassah Organization.

Penny Lunches.

The Penny Lunches are supported by the Hadassah women of the United States with Miss Sophia Berger in charge. Six such institutions are maintained in the following communities.

3 in Jerusalem
1 in Haifa
1 in Safed
1 in Tiberias

Food economics, the preparation and cooking of proper food, is taught to groups of girls selected from time to time in the school where this work is carried on, usually in groups of eight girls.

Malnourished school children selected by the physician obtain their lunches which have been prepared by these children under the direction of a dietitian.

STATISTICAL TABLE OF THE WORK OF THE HADASSAH MEDICAL ORGANIZATION. 1919–1926.

Year	*Patients Admitted to Hospital*	*Clinic*		*Home Visits*	*Laboratory Examinations*	*No. of Pupils under the Supervision of the School Hygiene Dept.*
		New Patients	*Total Visits*			
1919	3,481	57,036	339,461	10,736	9,567	10,395
1920	4,673	81,671	399,621	19,410	28,158	
1921	5,192	79,669*	438,729*	15,022	48,727	10,349
1922	6,936	109,800	601,860	22,360	71,998	9,354
1923	7,880	90,329†	515,680†	23,907	66,382	11,125
1924	8,330	94,126	521,822	39,125	80,746	11,655
1925	9,708	101,399	542,584	31,757	93,175	20,425
1926	10,041	110,068	602,485	37,498	102,167	22,619

*Including clinics in road building camps.

†Decrease due to transfer of a number of Hadassah Medical Organization clinics in Labor Settlements to the Kupat Cholim.

HADASSAH MEDICAL ORGANIZATION HOSPITALS AND CLINICS IN 1926

	Jerusalem	*Tel Aviv*	*Haifa*	*Safed*	*Tiberias*	*Total*
No. patients received at hospitals during 1926	3,060	3,819	2,081	1,081		10,041
Discharged Cases by Results						
Cured	2,293	3,160	1,349	509		7,311
improved	491	351	575	440		1,857
not improved	127	101	91	63		382
died	146	203	62	52		463
Total	3,057	3,815	2,077	1,064		10,013
No. of sick days in hospitals ...	43,517	43,469	19,267	19,975		126,228
No. sick days of Kupat Cholim members	9,775 (inc. 504 Mizrachi)	14,999 (inc. 815 Mizrachi)	7,867 (inc. 319 Mizrachi)	4,515 (inc. 160 Mizrachi)		37,156 (inc. 1,798 Mizrachi)
No. new patients in clinics ...	23,569	17,394	15,264	3,606	16,063	76,063
No. visits to clinics	117,231	85,319	59,505	46,240	96,574	404,869

PUBLIC HEALTH WELFARE SERVICE IN 1926.

	Pre-natal cases	*Infants*
Total number of cases	3,210	3,723
No. of visits to Health Welfare Centers ...	12,626	34,143
No. of examinations by physicians at Centers	5,576	3,229
No. of Home Visits to Families by Nurses ...	12,750	22,050

Budget.

The Hadassah Medical Organization submitted for 1926-1927 a budget amounting to £E149,000 exclusive of the Infant Welfare Budget, to the Actions Committee of the Zionist Congress.

The above mentioned committee reduced the budget to £E134,342, distributed according to the following sources:

(a) Hadassah the Women's Zionist Organization of America	£E90,620
(b) Keren Hayesod	22,100
(c) Baron Rothschild	2,103
(d) Canadian Hadassah	1,215
(e) Linens from Hadassah the Women's Zionist Org. of America for the institutions of the Hadassah Medical Organization	900
(f) Local Income (Yishub)	17,304

The Reserve Fund of 5% amounting to £E4,532, was retained in America. This was included in Item A- £E90,620.

An additional reduction of the budget of £E8,780 followed by further reductions of the local income, due to economic conditions compelled the curtailment of proposed activities.

HADASSAH MEDICAL ORGANIZATION SUMMARY OF GENERAL BUDGET. OCTOBER 1, 1926 TO OCTOBER 1, 1927.

Estimated Yearly Income.

Budget from Hadassah the Women's Zionist Organization of America ...		£E86,088
Regular budget from the Keren Hayesod		
Through Hadassah in Am.	14,400	
Through Pa. Zion. Ex. ...	5,490	19,890
Baron Rothschild		2,103
Canadian Hadassah Contributions ...		1,215
Contributions made in Palestine ...		181.500
Linens, etc., from Hadassah		920
Contract Payments from Cities		3,180
Contract Payments from Colonies ...		3,316.500
Payments from Patients in Hospitals ...		3,960
" " " " Clinics ...		2,640
" " Laboratories and X-ray department ...		1,962
" " Drugs and Home visits ...		1,539
Miscellaneous Income in the Branches ...		525
Reserve Fund		4,532
Total Income		£E132,032

Estimated Yearly Expenses.

Jerusalem Branch	£E40,898
Jaffa—Tel Aviv	28,437
Haifa Branch	14,875.800
Safed Branch	11,352
Tiberias Branch	4,308
Head Office	7,713
Supplies Dept. and Storehouse ...	2,460
General Expenses	1,410
School Hygiene Dept.	7,436.500
Rural Work	7,134
Linens to the H.M.O. Institutions ...	900
Miscellaneous Accumulators for the Rothschild Hospital, Instruments, etc.	425.700
Unforeseen Expenses and Contingencies	4,532
Total Expenditures ...	£E132,032

The appended statistical tables tell the story of Hadassah's work in Palestine. The magnitude of its operations may be gleaned from the following summary:

In 1926 over 10,000 patients were admitted to its hospitals and 110,000 patients made over 600,000 visits to the outpatient clinics. Over 37,000 home visits were made by nurses and 100,000 laboratory examinations were conducted.

23,000 Jewish school children are under medical supervision and over 3,000 babies and expectant mothers were carefully supervised in the prenatal and infant welfare clinics.

Over £E132,032 (approximately $660,160) were spent in the conduct of its various activities.

An estimated budget of £E142,125 ($710,625) has been submitted for the coming year. Much needed work has been carried on, and in most instances, in an efficient manner.

In view of the responsibilities and programs of other organizations, the pertinent question at this time is, "What part of this work, if any, is the responsibility of other health agencies, and what part should be discontinued by the Hadassah, ever mindful of the great good this organization has accomplished in its pioneer efforts for the promotion of better health among the people of Palestine during an emergency period?"

There are certain accepted fundamental public health services which are regarded the obligation of a municipal health administration. These official obligations are supplemented by voluntary organizations. Other health functions are started by voluntary initiative and maintained as private benefactions until the community is ready to take them over as part of the work of its health department. The Hadassah has played the part of the ideal voluntary agency which has tried, and has, we are sure, proven the value of satisfactory prenatal services, infant welfare and medical school inspection as factors in the promotion of better health among expectant mothers and children. How long shall they continue to carry on this work? We think in terms of a voluntary agency putting itself out of business, as soon as it has proven the value of certain public health measures. This viewpoint logically suggests that every effort should be made to acquaint the community with the value of this work and its obligation to organize itself so that this work might be carried on under official auspices. This is no different picture from the prevalent one all over the United States a few years ago when voluntary prenatal clinics, baby hygiene and home nursing were carried on by voluntary organizations, until the aroused community, realizing the value of this work, saw to it that its health departments began to conduct these and other health services which promote health. This cannot be done in a day and we must have a great deal of patience, but on the other hand, we must not, by our acts, create an assurance that this work in Palestine is going to be perpetuated, and arouse no sense of increasing obligation in the minds of the community and of the public health authorities about their place in such a program.

School medical inspection, excellently carried on by the Hadassah, and serving 23,000 children is necessary, and is a commendable piece of work, but why should the Public Health Department furnish this program for a similar group of Arab children in the so-called government schools? We are not willing to accept the definition of the government that the Hebrew schools be listed as charitable or private, but rather do we believe that they have been influenced in arriving at such a conclusion by the development of an extensive school medical program by the Hadassah Organization. In fact, we were given to understand that the government was asked to keep its hands off the Jewish school and the health care of the Jewish pupils. This they willingly did. Why should the government do this work when it is being done and done well? We believe the time has come for a change. We are satisfied that just as soon as the right pressure is brought, and intentions of giving up this work conveyed to the department of health, as well as to the office of the High Commissioner, the government will recognize its responsibility by organizing, and either take this work over or subsidize the Hadassah Organization in the continuance of this service. It is practically the duty of the Department of Health, in view of the fact that overcrowded conditions in the government schools preclude the possibility of raising the argument that Jewish children could attend government schools and thus get the services. There is not enough room at present for all the Arab children who would like to go to school.

Every community which wishes to organize for health efficiency thinks in terms of child hygiene, under which is included maternity, infant and pre-school and school hygiene. Sooner or later Palestine will wish to organize itself, and should take a short cut by availing itself of the knowledge acquired from proven principles.

Hospitals.

Hospital activities will always be a justifiable field for voluntary organization. The Hadassah hospital work has been of particular value in Palestine, and one cannot speak too highly of the work accomplished. We found the beds well filled, the outpatient departments overcrowded, splendid testimonials of community appreciation of the type of work carried on. Other institutions, in more pretentious buildings suffered by comparison.

Under this heading may be raised a very important question. How can this overcrowding be diminished, or who shall share in Hadassah's hospital obligations? The care of contagious and infectious diseases is a major health problem which should be a governmental responsibility. The Government is, in fact, now planning a series of fever hospitals at strategic points. Practically all cities in America and Europe maintain contagious and infectious hospitals under the direction of Health Departments or other official bodies. In Boston, when our hospitals are overcrowded with contagious and infectious cases, we sometimes are obliged to go to other hospitals, or to the official contagious hospitals of neighboring communities for bed help. When we go we always pay the bill. If Hadassah is to help out the Govern-

ment to care for infectious fevers in Palestine, it should loan its beds, but be paid for the care of the patient.

In studying the hospital budget we find a disproportion in the per capita cost of patients in the various hospitals maintained by the Hadassah. This varies from 44 piasters ($2.20) in Safed to 61.9 piasters ($3.25) in Jerusalem. This difference is attributed to important and logical factors, among which may be listed excellent x-ray, laboratory and pathological service in Jerusalem, as well as full time salaries to specialists, who head various services. Rent is paid for hospital space in some of the cities and not in others. Scattered services, equipment which is not modern and other factors tend to cause expensive overhead.

Jerusalem is the logical center for Palestine, and we are in accord with the expenditure of money which will give the Jewish hospital in Jerusalem the very best organization and equipment. We are firmly convinced that everything should be done to make the Hadassah Hospital center in Jerusalem an institution of high standard, staffed by the best men obtainable, who should be allied with the Hebrew University as a teaching and research force in the latter institution. In this way there will develop the advantageous relationship found in many leading cities in the United States where prominent medical schools and colleges tie up with the best hospitals in the community.

Tel Aviv, a city of almost 40,000 Jewish people is to be given serious consideration in the up-keep of the Hadassah Hospital, although we desire to stress at this time, the suppression of such hospital services which are municipal, allusion to which, has already been made.

In Haifa and Safed, everything should be done to reduce to a minimum the overhead in keeping with acceptable service.

About 75% of the services rendered in Hadassah Hospitals were for free patients, and out of a total budget for 1926-1927 of £E132,032, approximately £E17,000 were received from patients and contracts with colonies.

Of the entire Hadassah proposed budget for 1927-1928 of £E142,125, the approximate sum of £E16,750 is regarded as income from patients and colonies, leaving a budget of a little over £E125,000 to be raised. The total sum asked of the Hadassah Medical Organization is approximately £E135,997, which includes the infant welfare budget and reserve fund. This increase of approximately £E123,000 over previous sums asked by the Hadassah Medical Organization is due to the fact that the Karen Hayesod contribution has been replaced by the pledge of the Hadassah, the Women's Zionist Organization, to raise the entire budget for health work in Palestine. Of the proposed budget, £E91,505 is to be expended only on the hospital and outpatient clinics, divided by districts in the following sums:

Jerusalem	£E38,371
Tel Aviv	26,214
Haifa	14,154
Safed	12,366

In order fairly to analyze the hospital budget of the Hadassah, we

are taking the Rothschild Hospital in Jerusalem as a single Unit, comparing it with the four leading hospitals of Boston, which occupy a very high place in this field in the United States. It is simpler for purposes of comparison to take the Rothschild Hospital itself rather than all the Hadassah Hospitals.

The Rothschild Hospital, in the way of building and equipment, compares favorably with some of the older buildings in the Boston City Hospital, Homeopathic Hospital and the Massachusetts General Hospital. The newer buildings of the Boston City Hospital, Homeopathic, Massachusetts General and Peter Bent Brigham Hospitals, are of course, modern and up to date, which tend to promote economy of administration.

THE FOLLOWING TABLE IS PRESENTED WITH AN ANALYSIS OF COMPARATIVE ITEMS IN THE FIELD OF NURSING AND PERSONNEL IN THE KITCHEN, LAUNDRY, HOUSEKEEPING AND DRUG STORE:

HOSPITAL	*No. of Beds*	*Nurses*	*Kitchen*	*Laundry*	*House-keeping*	*Druggists*	*Total Personnel*
Rothschild Hospital	121	22 paid 15 prob.	16	21	28	4	150 plus
Boston City Hospital	942	241	68	60	170	3	979
Homeopathic Hospital	527	74	41	32	87	2	411
Peter Bent Brigham Hospital ...	246	32	15	20	37	4	382
Massachusetts General Hospital ...	432	79	81	39	153	10	739

We are making no comparisons of the medical personnel in view of the fact that Hadassah employs full time physicians, which differs in a degree from most of the medical staffs of the Boston institutions, with which we are making comparison.

A comparative analysis based upon the budget for 1927-1928 follows:

In the field of nursing, counting graduate and probationary nurses, the Rothschild Hospital employs 37 nurses for 121 beds, which is a little over three beds per nurse. The Peter Bent Brigham Hospital employs 32 paid nurses, which is one for a little over seven beds. The Massachusetts General Hospital employs 79 paid nurses, which is five and one half beds per nurse. The Homeopathic Hospital employs 74 paid nurses, a little over seven beds per nurse. The Boston City Hospital has not quite four beds per nurse.

From an analysis of the above it would appear that the Hadassah employs more nurses in proportion to the bed strength at the Rothschild Hospital than the four hospitals in Boston with high standards.

An analysis of the employees in the kitchen, finds the Rothschild employing 16, one to a little less than eight beds; the Massachusetts General Hospital, one to a little over five beds; the Peter Bent Brigham Hospital, one to a little over sixteen beds; the Homeopathic Hospital, one to a little over thirteen beds; the Boston City Hospital, one to about fourteen beds.

Outside of the Massachusetts General Hospital the Hadassah employs more people in the kitchen than the other three Boston institutions.

In the laundry, the Rothschild Hospital employs one person to about every six beds; the Massachusetts General Hospital employs one to about eleven beds; the Peter Bent Brigham, one to about twelve beds; the Boston City Hospital, one to about fifteen beds; the Homeopathic Hospital, one to about every sixteen beds.

The Rothschild appears to employ from two to three people more, in proportion to its bed strength, than any of the Boston institutions for its laundry work.

In the housekeeping department, the Rothschild Hospital employs 28 people, one for about four and one half beds. In the Peter Bent Brigham Hospital, one person is employed for about every seven beds. The Homeopathic Hospital employs about one to every six beds. The Boston City Hospital employs one to every five and one half beds. The Massachusetts General employs one for less than three beds.

An analysis of this item shows that the Hadassah employs more people in its housekeeping department than the Peter Bent Brigham Hospital, Homeopathic and Boston City Hospitals, being exceeded only by the Massachusetts General Hospital.

The Hadassah employs four druggists in its pharmacy at the Rothschild Hospital. The Peter Bent Brigham Hospital with more than twice the bed strength, employs the same number of druggists. The Boston City Hospital with almost eight times the bed strength employs one less druggist. The Homepathic, with almost five times the bed strength, employs one half as many druggists. Only the Massachusetts General Hospital which has a tremendously large outpatient

department, a very exclusive private wing and the Eye & Ear Infirmary, keeping separate druggists in each of these departments, as well as in the hospital itself, employs more druggists.

In an analysis of the total number of employees which includes all personnel except medical staff, we find the Boston City Hospital employs a small fraction of over one person per bed. The Homeopathic about four-fifths of one person per bed; the Peter Bent Brigham about a little over one and one half persons per bed; the Massachusetts General Hospital one and three-fourths plus per bed; the Rothschild Hospital about one and one-fourth person per bed.

The Rothschild Hospital employs more persons per bed than the Boston City Hospital and the Homeopathic Hospital, not quite as many as the Peter Bent Brigham. The Massachusetts General Hospital is the only Boston institution which employs a really larger ratio of personnel per bed than the Rothschild Hospital.

On the basis of an analysis of the different items it would appear that a practice of economy might tend to reduce the employed personnel in the different departments.

In going into the nursing question, we find sixty-five pupil nurses at the Rothschild Hospital, receiving their training in connection with the much needed training school for nurses in Palestine.

We find 45 plus practical nurses employed in Tel Aviv, 15 practical nurses employed in Haifa and 18 practical nurses employed in Safed. It would seem possible, as well as logical for the nurses to receive a portion of the training in the other hospitals under the supervision and instruction of graduate nurses or a supervisor, for at least one, and possibly two years of their three years in training, the balance of their time being spent in the Jerusalem hospital. They could in a considerable measure, replace the practical nurses. It would save a considerable amount of money expended for salaries, food, etc. This is a minor instance of consolidation and cooperation.

We are conscious of the fact that the administration of the Rothschild Hospital may have some arguments in rebuttal of the analysis, we have presented, but all in all, it would appear to us that some money could be saved by the reduction of what appears to be a larger personnel than that employed in some very fine Grade A hospitals in Boston.

Again we desire to repeat that the figures which we are quoting in this analysis are based upon a submitted budget for 1927-1928 which does not appear to be radically different from that which the Rothschild Hospital operated upon in 1926-1927, particularly in the departments which we have selected for an analysis.

The personnel employed by the Hadassah is greater per bed than that in the Kupat Cholim, Mission and Government Hospitals in Palestine, as well as a number of European hospitals, organization of which and the number of persons employed, we have carefully gone into.

We desire to commend highly the earnest efforts for high standards which appear to be the motivating desire of the Director of the Hadassah Medical Organization. It is perhaps quite true that other hospitals in Palestine may be undermanned. On the other hand, we

do not believe that there needs to be maintained as high a percentage of personnel per bed in Palestine as there is in the very best teaching hospitals in the United States. We say this mindful of the fact that physical equipment, the size of wards, quality of service, conditions of premises and other factors enter into the consideration of ratio of beds to number of employees.

Part Time and Full Time Medical Service.

One of the factors entering into a study of the budget of the Hadassah and which is superseded in importance by a state of mind of the medical profession, both within and without the Hadassah Organization in Palestine, is the term of service of the physician on the staff of the Hadassah Medical Organization.

This has been a subject of debate almost since the entrance of the Hadassah Medical Organization in Palestine.

When the Hadassah Medical Unit first came over, contracts were made with the medical group which constituted the Unit, whereby they gave up the right to carry on private practice, and where payment was made for medical service it reverted to the Organization. The appointment of local physicians immediately raised the question of their privilege to continue in the engagement of private practice. Their contention was that they could not afford to lose their identity with their private practice, in view of a possible disintegration of the Hadassah Medical Unit, following the war. The three local physicians engaged by the Unit, were permitted to continue their contact with the patients, the money derived from such practice being turned over to the treasury of the Hadassah.

A little later on, modifications were made whereby two other physicians, in addition to the three already mentioned were allowed the privilege of engaging in practice, with a reduction of their Hadassah salaries.

This was regarded in the nature of an experiment, which met with the disapproval of Dr. Rubinow, at that time the Director of the Unit, in which he claimed the backing of the majority of the physicians on the medical staff. The administration assumed the definite attitude of withdrawing permission to engage in private practice from the medical staff of the Hadassah, and all such privileges were withdrawn in March 1921.

Later on, Dr. Simon Tanenbaum who acted as Director of the Hadassah Organization in Palestine from December 1923 to October 1924, proposed the experiment of a gradual change, with the object in view, that if successful, it was to be extended throughout the entire Hadassah Medical Organization, whereby the physicians on the Staff were to be permitted to engage in the private practice of medicine, with an immediate reduction of 50% of their salaries, and the remaining 50% of their salaries to be withdrawn gradually, within the period of six months to a year. Such physicians as bacteriologists, roentgenologists, etc., were to remain on full time.

An analytical study of this demonstration made by Dr. I. M. Rubinow, stressed the fact that the reduction of the salaries as against a

loss of revenue derived from patients, the funds of which were turned into the treasury, resulted in very little money saving. Dr. Rubinow pointed out that the guarantee of an income against the contingencies of accident or disease, and the elimination of worry would result in the obtainment of the best medical brains to the advantage of the Hadassah Medical Organization and the population of Palestine.

There are many sound arguments for the employment of full-time personnel in the field of medical administration, research, public health service and hospital organization. On the other hand, there are definite obligations which a hospital owes to the medical profession of a community. The hospital plays an important part in the furtherance of medical education. Opportunities for training and experience, consistent with the best interests of the institution, should be placed at the disposal of a limited number of well intentioned members of the medical profession interested in the acquirement of better medical knowledge and technic.

Local conditions and circumstances must govern in the organization of such a program. We can see very good reasons why the best men should be obtained by the Hadassah Medical Organization to head its departments in the various fields of medicine on a full-time basis. We can see where some of these conscientious, able men with ideals may do a very much better full-time job assured of no financial worry, and able under those circumstances to apply themselves throughly to the practice of their specialty and to research in it. We do not hesitate for a moment to endorse the policy of the Hadassah in securing such men as the heads of the various departments. Under them should be a certain number of full-time assistants, specialists and colleagues sufficient to form the backbone of a stable and effective organization. But associated with this full-time nucleus, others should be employed on a part-time basis. The full-time group must necessarily be limited for economic as well as for the above mentioned reasons, but the time seems ripe to try in a cautious and experimental way the part-time policy, consistent with the best interests of the community, thereby creating an opportunity for members of the medical profession who are able or desirous of improving their medical knowledge to do so. Such a policy would have the advantage of raising the standards of the medical profession.

The problem of full-time and part-time service in the medical profession is one that has puzzled the best minds in England and the United States. We recognize that here we are on debatable ground and it is not entirely clear how the situation is going to work out with reference to the best interests of the community and the medical profession of Palestine.

In view of the poor economic conditions of the great majority of Jewish population, it is perhaps a bad time to stress too radical a change at one time. Any reorganization must have in mind adequate provision for hospital and outpatient service for those who are unable to pay. On the other hand, the policy of supplying medical service for rich and poor alike should be critically examined.

The question of salary increases must be weighed carefully. Are

they necessary to retain the services of very good men? If not, should they be allowed in view of the shortness of funds?

Salaries do not appear to be uniform, which suggests the grading of the same from a minimum to a maximum, with a schedule of increases based on length and quality of service.

Closer Alliance With Zionist Executive.

The generally accepted opinion is that the Zionist Executive is the agency and the voice of the Jewish population of Palestine. It is the recognized agency by the Mandate Government and the League of Nations. We recognize the Hadassah medical work as the national health service and throughout the literature of the Hadassah is phrased the fact that the health work of the Hadassah is intended to promote better health, particularly among the people of Palestine. It is unwise therefore to separate the work of the Hadassah from the program of the Zionist Executive.

Zionistic aspirations for the creation of a Homeland is dependent upon the development of a program for the health of the population. If the Zionist Executive is the agency entrusted with the responsibility of protecting the Zionistic interests, by the creation of various developments, urban and rural, industries and commerce, etc., how can this be done without thinking in terms of health? Who shall advise the Zionist Executive and who shall carry out certain specific health services, particularly those of a type which may be defined as voluntary, and under which heading may be listed hospitals, dispensaries, rural clinics, etc.? If Hadassah has been organized to promote health service for the Jewish population it does not sound like good organization to do it independently of the Zionist Executive.

Advocates of the belief that this work may best be carried on as a cooperative and independent organization, firmly feel that the political danger of an immediate tie-up with the Zionist Executive is too great to be risked, and that the quality of the work would be impaired, and the influence of the American Governing Board, which has maintained a high standard of efficiency of service, would be lost. It would indeed be absurd to recommend any change of plan which would impair efficiency and standard of service, and which would suggest political meddling with good health work. Yet this picture is typical of that in many American communities, where Health Departments have been interfered with by Mayors, until the time came when education of the public on health matters resulted in the reduction to a minimum of the meddling of political influences in the field of public health service. Shall we side step what appears to be the best type of organization because of a fear of politics? Is it not better to set up a private organization so constituted that it may eliminate entirely, or reduce to a minimum, the possible dangers of interference? We are bold enough to make the following recommendations which are based upon experiences in Boston and in other cities:

We are mindful of the fact that criticism, emphasizing the absurdity of any endeavor to compare American municipalities with Palestine of today, will probably be made, but why should not Pales-

tine benefit from that which we have learned after bitter experiences of many years? We are living in an age of rapid progress and one in which communities may enjoy the benefits of knowledge acquired by other parts of the world, somebody else having already paid the price for such knowledge.

We would recommend:

(1) That the Hadassah Medical Organization constitute itself the Department of Health of the Zionist Executive;

(2) That the Director be appointed by the Hadassah, the Women's Zionist Organization;

(3) That the Executive Director shall have a small Advisory Committee, which shall have no executive functions.

This Advisory Committee composed of the best brains and the leaders of the health and welfare forces of Palestine, ought to be able to eliminate politics and meddling.

This may sound extremely radical, but it would serve to protect the health interests of the Jewish population. It would bring together the Zionist Executive and the Hadassah Medical Organization. Its development should be dependent upon the withdrawal of the Kupat Cholim from health work, reducing to a minimum the number of agencies engaged in hospital and dispensary service, among the Jewish population. It would strengthen the position of the Hadassah and the Zionist Executive with the Government Department of Health.

This reorganization would replace the Vaad Habriuth as an Advisory Council to the Zionist Executive and should eliminate the Kupat Cholim as a medical organization.

Needs.

Nothing in the above statements concerning the transfer of Hadassah operations to the Government or other economies that would conserve the budget should be interpreted as meaning that the Hadassah could get along with less. It needs and should have more instead of less even if our recommendations are carried out. Money is needed to improve and expand the hospital and clinic work, to drive home and complete the prevention of trachoma, to provide for public health nursing and home visitation; also for public health education, for better service in the care, prevention and control of eye diseases, and for the acute needs with reference to the insane, mental defectives and the promotion of mental hygiene. With more funds much needed work could be done to lower infant mortality and promote child welfare. Furthermore, there is the ever present need of public health education in the art of hygienic living. With more resources at hand more effective work could be done along the lines of preventing typhoid, tuberculosis and many other avoidable infections. Finally, there is the fundamental need of finding and supporting native genius to learn new truths through scientific research. If sufficient means were at command, much more beneficent work for the health and welfare of our people in Palestine could be accomplished by the Hadassah Medical Organization, which deserves generous support.

Kupat Cholim.

(A sick benefit fund of the Jewish Cooperative Labor Organization).

The purpose of the Kupat Cholim (Kranken Casse) as its name seems to imply, was originally intended to furnish sick benefit during illness, giving their members at that time medical care through the Hadassah. In 1922-1923 they began to organize their own medical service.

The Kupat Cholim was started in 1914 with about 500 members which grew to about 1200 in 1919. The real development may be traced since 1922 with the following gain in membership from year to year:

1922	...	5,746
1923	...	6,600
1924	...	8,100
1925	...	12,350
1926	...	15,364

While we speak in terms of members, the families of members are beneficiaries, thus totalling a group in all of over 25,000 people.

It operated in 1926 upon a budget of approximately £E55,000 of which almost a third was provided by the Palestine Zionist Executive and about two-thirds collected in monthly membership fees, graded and dependent upon the salary income of the member.

It has 69 branches, seven in the cities and towns and 62 in the colonies and Workmen's Agricultural settlements, distributed in the following membership and percentage:

	Number of branches		*Number of members*	*Per-centage*
1.	7	in the towns	8,017	52.2
2.	23	in the colonies and private concerns ...	4,166	27.1
3.	39	in the workmen's agricultural settlements	3,181	20.7
	69		15,364	100%

Program.

The program of the Kupat Cholim may be divided as follows:

(a) Medical treatment.
(b) Convalescence.
(c) Financial assistance.
(d) Maternity assistance.
(e) Sanitary and prophylactic work.
(f) Administration.
(g) Miscellaneous.

Staff.

The following staff serves the patients of the Kupat Cholim institutions:

Physicians	... ...	61
Nurses	... ...	53
Pharmacists	... ...	12
Sanitary assistants	...	2

Organization.

The medical department of the Kupat Cholim is under the direction of a chief physician whose duties are to direct the medical work of this institution. He has an advisory board of five members constituting a medical council, who pass upon the problems of the medical work and participate in constructing the annual program of the medical work of the Kupat Cholim.

Medical Assistance.

The Kupat Cholim furnishes medical and nursing care, hospital assistance and drugs.

Up to March 1922 the medical care was carried out through the Hadassah Medical Organization. Since then it has set up its own institution which it has greatly developed until it now has from its point of view, an intensive medical organization.

Its expenditure for medical care during the past four years has been as follows:

1922-1923	54.8%	of	its	total	expenditures.	
1923-1924	63.3%	"	"	"	"	
1924-1925	59.2%	"	"	"	"	
1925-1926	60.6%	"	"	"	"	

During 1926 it had hospitals in the following places: Ain Harod, Tiberias, Petah Tikvah, Hedera, containing in all 88 beds in the winter and 122 in the summer. 2400 patients were treated at these hospitals. 52 outpatient clinics were opened in 1926 by the Kupat Cholim.

The Kupat Cholim opened a hospital in Ain Harod in 1923 which serves the settlements of the Emek. This is a 50-bed hospital which at seasonal times has had an increased bed capacity. It has wards for internal medicine, obstetrics and children's diseases.

The hospital buildings are wooden, entailing frequent repairs. The general conditions are clean, but the equipment is meager.

The hospital is in charge of a physician-in-chief with two house physicians, one of them a bacteriologist, and twelve nurses. It has a per capita cost of 32.10 piastres per day per patient, and serves a neighboring population of approximately 4,000. The following is a brief table of patients treated:—

1924	1,018	patients	9,885	sick	days
1925	1,304	"	12,459	"	"
1926	840	"	15,449	"	"

Sick rooms were established by the Kupat Cholim in Petah Tikvah and Hedera for seasonal needs which are usually greater in the summer. These institutions may be listed as extremely temporary, the Ain Harod Hospital being regarded now as the only permanent one.

A plan has been drafted for the creation of a fund to aid in the advanced training of the staff. The members of the staff are expected to contribute equally with the sick fund which will make it possible

for doctors and nurses employed for three years to be sent to institutions of learning for additional training.

Dispensaries.

The following table briefly describes the dispensary personnel in the cities:

	Tel Aviv	*Haifa*	*Jerusalem*	*Total*
General practitioners ...	5	2	2	9
Specialists	8	5	4	17
Nurses	4	2	1	7
Registry staff	2	1	½	3½
Service and cleaning ...	3	1	1	5
Total	22	11	8½	41½

Following is the expenditure in 1925-1926:

Tel Aviv	£E5,190.790
Haifa	2,238.806
Jerusalem	1,596.165
Total	£E9,025.761

Number of visits made to dispensaries:

	Tel Aviv	*Haifa*	*Jerusalem*	*Total*
1923-1924	63,759	32,232	3,153	99,144
1924-1925	131,443	24,277	26,376	182,096
1925-1926	201,149	26,900	52,206	280,255
Total	396,351	83,409	81,735	561,495

The following general services were rendered: Internal Medicine, Children's Diseases, Diseases of Women, Surgical, Nose, Throat and Ear, Skin Trouble, Ophthalmology in Tel Aviv and Nervous Diseases in Jerusalem.

Convalescence.

The Kupat Cholim regard their convalescent work as an extremely important phase of their endeavor, in view of the prevalence of diseases which have a tendency to make convalescent care a necessity.

It contains a convalescent home Arzo at Moza, about eight kilometers outside of Jerusalem. This institution was opened in December 1924 with 30 beds, which capacity has recently been almost doubled. Its staff consists of a director, a physician, a graduate nurse, 8 pupil nurses and a housekeeper. The following table gives briefly a picture of the activities of the institution:

In 1925—476 convalescents, with 10,261 days of convalescence
In 1926—417 convalescents, with 8,469 days of convalescence

A convalescent home built on Mt. Carmel is almost complete. It is intended to take care of about ten lying-in women, infants and 15 convalescents.

Distribution of Drugs.

The Kupat Cholim maintain an extensive department for the distribution of drugs which may be gleaned from the fact that in 1926, 262,087 prescriptions were filled in the drug departments of the various clinics.

Travelling Expenses of Patients.

Patients ordered by physicians in the rural clinics to come to the central clinics where a higher standard of medical service is maintained, receive their travelling expenses from the Kupat Cholim organization. The sum of £E1,227.480 was expended in 1925-1926 for travel.

Expenditure on Private Hospitals.

Owing to the scarcity of beds in public institutions in Palestine, the Kupat Cholim have been compelled from time to time to send their patients to other hospitals for which the sum of £E586.425 was expended in 1925-1926.

Expenditure of Kupat Cholim on Rural Dispensaries.

1923-1924	£E5,185.279
1924-1925	6,279.749
1925-1926	8,239.286

The increase in the expenditure was due to increased settlements and improvement of dispensaries. These rural clinics are very important to new settlers, to workmen of the colonies and of industrial enterprises. Special mention may be made of the dispensaries in the distant, isolated settlements.

Maintenance Allowance During Illness.

The Kupat Cholim grants to its members a maintenance allowance during illness when they received no wages, divided under the following headings:

(a) After a serious illness, such as typhoid, pneumonia.
(b) After mild diseases which incapacitate the individual from performing his labor.

Married persons receive an additional 50% of the fixed allowance.

The Kupat Cholim has spent the following amounts on maintenance allowances:

In 1922-1923	£E4,468.626				
1923-1924	3,505.860	with	days of	maintenance	33.8535
1924-1925	4,492.130	"	" "	"	44.414
1925-1926	4,922.592	"	" "	"	47.769
Total	17,389.208				

Assistance to Lying-in Women.

The Kupat Cholim include among its activities, assistance to lying-in women, finding accommodations for them in

(a) maternity wards of the hospitals, preferably the Hadassah.
(b) its own hospitals in Ain Harod.

Assistance to Chronic Patients.

While the Constitution of the Sick Fund of the Kupat Cholim prevents any individual from receiving more than two weeks sick allowance, the Kupat Cholim, nevertheless, has cooperated in the granting of financial aid to the chronic sick and has expended on chronic patients the following amount:

1922-1923	£E922.149	(including convalescent home at Safed)
1923-1924	541.580	
1924-1925	449.568	
1925-1926	1,089.342	

Prophylaxis and Sanitation.

The medical staff of the Kupat Cholim has contributed to the administration of infant morbidity and mortality by the employment of pediatricians in its institutions in Tel Aviv, Jerusalem, and Haifa, as well as in the hospital in the Emek. Gynecologists and Obstetricians give advice and instructions in their field, thus providing a form of prenatal service.

Efforts have been made both to persuade the physicians employed by the Kupath Cholim in the colonies to emphasize a sanitary control, and to send sanitary assistance to the places where diseases affected by poor sanitation are most prevalent.

Kupat Cholim—1926.

Number of Nurses		
In the clinics	28	
In the hospitals	15	
Total	43	

The nurses working in the clinics are distributed as follows:

In the Towns		
Tel Aviv	5,	one of them not fully employed.
Haifa	1	
Jerusalem	1	
Total	7	
In the Villages	21,	12 of them not in full employment.
Total	28,	13 of them not in full employment.

Number of Physicians.

In the Towns

	Total	*Full time*	*Part time*
Tel Aviv	12	3	9
Haifa	10	1	9
Jerusalem	5	1	4
	27	5	22

In the Villages

	Total	*Full time*	*Part time*
District of Tiberias	2	1	1
" " Emek (inc. hospital) ...	8	6	2
" " Haifa	4	2	2
" " Shomron	3	—	3
" " Petach Tikvah ...	3	2	1
" " Jaffa	9	2	7
	29	13	16

Besides:

Director of Medical Work at the Center	1	1	0
Doctor of nervous diseases (Moza, Tel Aviv, Jerusalem) ...	1	—	1
Total	58	19	39

Number of attendance in the town clinics and the cost of same: (Tel Aviv, Haifa, Jerusalem)

	Number of attendances	*Cost of Clinics*	*Cost per attendance*
1926	280,255	£E9,210	3.28
1925	182,096	5,503	3.02
1924	99,144	3,088	3.00

	Cost of Rural Clinics
1926	£E8,239
1925	6,279
1924	5,185

	Cost of Hospitals in 1926
Ain Harod ...	£E4,330
Petach Tikvah	550
Hedera ...	314
Sanatorium Moza	3,891

The Cost of the Urban Clinics (Tel Aviv, Haifa, Jerusalem) in 1926 was worked out as follows:

Doctors	£E5,305
Nurses	1,108
Drugs	2,283
Administration	1,835

The Kupat Cholim expended approximately £E55,000 in the past year, collecting two-thirds of this money from its membership of a little over 15,000. Originally founded for sick benefit during illness, it has expanded, now carrying on a very elaborate program of hospitals and outpatient clinics and convalescent care, with a staff of over 125 actually engaged in direct health service.

We visited the four Kupat Cholim hospitals and almost every one of the fifty dispensaries maintained by this organization. The clinics were well kept, clean, orderly and usually situated in a good location. The doctors and nurses were affable, courteous and made a favorable impression so far as their professional skill was concerned.

Much of the medical care, particularly of the hospital type for Kupat Cholim members, is being furnished by the Hadassah. The cost per day in the Kupat Cholim hospital is lower than that of the Hadassah, but the reason for this is quite manifest. The Hadassah maintain specialists' services, extensive laboratories, X-ray rooms, pathological laboratories, etc. All of this costs money, and is justifiable. The study of comparisons seems to show that the Hadassah Organization pays higher salaries. The question naturally arises whether the Hadassah salaries are too high or the Kupat Cholim salaries are too low. We do not believe that, as a general rule, salaries of the Hadassah rank and file are too high, although our attention was called to the fact that the cost of salaries and wages alone per sick day in the Hadassah Hospital is equal to the total cost of a sick day in the Kupat Cholim.

Generally speaking we are of the belief that the personnel of the Kupat Cholim was numerically too large for the number of services rendered to the community which it serves. If both the Hadassah and Kupat Cholim were to continue as working health agencies in Palestine, it would be desirable that much duplication be eliminated, by only one of these agencies serving in a community, particularly in rural ones (although we can see no reason why, in the event of the continuance of both organizations in health service there should be two outpatient departments in Jerusalem, two in Haifa and two in Tel Aviv, serving the Jewish people). We do not agree with the argument that if you eliminate one of these organizations in a community, the transfer of the work to the other agency would entail the exact duplication of personnel. The overhead of two organizations engaged in a similar piece of work is always larger, and the actual staff needed to see the daily number of patients is never as large as when employed by two distinct organizations in two different headquarters. Afule furnishes a typical example. Here we found a physician conducting a Hadassah clinic and another one representing Kupat Cholim. Both of these gentlemen lived in perfect amity, but it seemed to us they had plenty of time to cultivate this friendship. We are quite sure that here and in many other places one of these organizations could furnish the complete health services for the Jewish community, with a saving to the Zionist Organization which contributes materially to the budget of both.

We were impressed with the very good work carried on by the Kupat Cholim, and also with the rapid growth and development of this organization which has trebled its membership in the last five years. We cannot, however, get away from the fact that this organization was originally intended to function as an insurance and sick benefit organization, receiving its medical services through the Hadassah. We were informed that the Kupat Cholim were obliged to expand to furnish medical service of their own through apparent dissatisfaction with the Hadassah Medical Service, and particularly in order to protect their organization from sick claims not based, in every instance, on a morbid condition. It would seem to us that this was not a justifiable reason for the development and expansion of a second health organization serving the Jewish community.

The proposed Hadassah budget for 1928 is almost three quarters of a million dollars. The budget of the Kupat Cholim is over one quarter of a million dollars. We feel sure that the total sum of money consolidated into one organization would go much farther and contribute materially to much better health work with the elimination of friction and misunderstanding, waste of a double executive overhead, and duplication of effort. The money which is now being expended by the Kupat Cholim for medical service might very well be used for sick benefits, insurance and convalescent care.

We would recommend that the Kupat Cholim turn over its medical program to the Hadassah Medical Organization as part of a reorganization of health work, whereby the Hadassah would become the Department of Health of the Zionist Executive. The Kupat Cholim would, in the event of this, protect its interest by representation on the Advisory or Executive Committee of the proposed Department of Health (Hadassah).

Again we emphasize this as another striking example of the need of consolidation and cooperation, which will result in increased economy and improved efficiency.

Vaad Habriuth.

Vaad Habriuth is the Health Council of the Palestine Zionist Executive. It claims for its object the coordination of the activities of existing medical institutions, subject to the authority of the National Bodies or of Public Jewish Institutions.

The Health Council strives for the highest efficiency in medical work and for the development of preventive medicine (sanitary measures, anti-tuberculosis work, propaganda, etc.)

It organizes and centralizes the medical and sanitary statistics, in the domain of social hygiene (births and deaths, infectious diseases, infant welfare, school hygiene, workmen's hygiene, etc.)

It creates a permanent connection between the medical institutions and the highest organs of the Zionist Organization and the Yishub.

It claims to promote scientific and other connections between Jewish medical institutions and official and non-official medical institutions in the country and abroad.

Composition.

The Health Council has the right, with the approval of the Palestine Zionist Executive to accord to representatives of other medical institutions and to individuals, the right to participate in its meetings in an advisory capacity.

The institutions represented on the Council have the right to elect permanent deputy representatives to represent the members during their absence.

Organization.

The Health Council elects from its members a permanent Presidium consisting at the present time of three members, Dr. Feliz, Dr. Bluestone and Dr. Mandelberg; Dr. Katznelson was elected as the manager of the Secretariat, which works in agreement with the Presidium. The Health Council meets at least once a month.

The Sanitary Commission, Budget Commission, Publications Commission, etc., are attached to the Health Council. Non-members of the Council are eligible for membership on the Commissions.

In accordance with its by-laws which were incorporated in February 1926, the council was assembled in the following manner:

Dr. Feliz, Dr. Dostrowsky and Dr. Katznelson, representatives of the Zionist Executive. Dr. Bluestone, Mr. Katznelson, representatives of the Hadassah. Dr. Mandelberg and Mr. Perelson, representatives of the Kupat Cholim. Dr. Rokach and Mr. Goldberg, representatives of the Vaad Halumi. Dr. J. Stein and Dr. Rosenthal, representatives of the Hebrew Doctors Organization in Palestine. Beside these Dr. Zel-Zion, representing the Kupat Cholim of the Poale Hamizrachi, was added to the Council as an advising member.

The Council employs the following personnel:

Managing secretary,	Dr. A. Katznelson.
A physician,	Dr. S. Peller, who is manager of the office of social hygiene, as well as statistician.
Sanitary visiting physician to the colonies,	Dr. A. Ratner.
Two sub-ordinary workers:	Mr. Even Toy, general secretary and Miss Wilensky, typist.

It has a salary roll of approximately a little over £E900 a year. This is subsidized by the Zionist Executive receiving budget of 1926 of about £E1,400.

Scope of Activities of Organization.

Consistent with its purpose, it has worked through temporary committees for the investigation of various health problems, among which may be listed:

Sanitation.
Care of the insane.
Study of a central hospital in the Emek.

Study of workingmen's insurance.
Investigation of typhoid epidemics.
Study of the budgets of the various Jewish organizations.
Lectures and publications on hygiene.
Studies of hospital facilities and cost.
Stimulation of the organization of an anti-tuberculosis league.
The organization for a social bureau of hygiene and medical statistics.
Negotiations with the department of health for the improvement of facilities for the care of tuberculosis.
Cooperation between the department of health and the Vaad Habriuth for organizing anti-typhoid campaigns in the Emek and Tel Aviv.
Discussion with the department of health for the redrafting of a medical ordinance.

Conclusions and Recommendations.

The Vaad Habriuth as the Health Council of the Palestine Zionist Executive, was a well intentioned set-up, defined shortly after its organization, as the highest medical authority, and intended to act as a representative body of Jewish medical work in Palestine. It had the ideal purpose in mind of coordinating the activities of the existing medical institutions. Its purpose has been most laudable, and some of the work of the Council deserves the highest commendation.

As a correlating agency, endeavoring to promote relationships, it has been a failure for the following reasons:

As constituted the Vaad Habriuth is composed of eleven representatives of five organizations. Of this group two represent the Hadassah, an organization spending almost three-fourths of the total sums of money spent by Jewish health agencies, leaving nine representatives for the other groups. The Palestine Zionist Executive, being entitled to select three representatives, chose some members of the medical staff of the Hadassah Medical Organization and its director, employees of the Hadassah, in this instance members of the Vaad Habriuth were in a position to criticize freely their employers and their superior officer, and to vote on resolutions in condemnation of the work carried on, or in demand of a change of policy or of technique. It seems quite evident that this could not tend to develop correlation and to promote better relationships.

A particular example to which our attention was called was that of the presiding officer of the Vaad Habriuth (Dr. Felix), the Director of the Hadassah laboratories, sitting in judgment upon the budget of his own department which had been approved by the Hadassah administration.

It is quite easy to exaggerate and overemphasize both sides of this question, but we do not believe that any committee composed of subordinates of major health organizations can promote better relationships between such organizations, if placed in a position to criticize their superior officers or their organizations by whom they may be employed.

Again we repeat our unqualified endorsement of the very excellent purpose for which the Vaad Habriuth was founded, and commend some of the improvements for which it was responsible, but we cannot endorse its set-up, nor do we believe for a moment that it can further one of the most important problems in Palestine health work, namely, development of better relationships.

Our recommendation that the Hadassah Medical Organization shall constitute itself the department of health of the Zionist Executive, and that the Kupat Cholim turn over its curative health program to the Hadassah would make the latter organization the advisory council and the correlating agency of whatever there is left to correlate in the way of Jewish health activities, doing away with the need of a Vaad Habriuth as such.

This recommendation may appear quite radical but we must not forget that the aim and purpose of the Vaad Habriuth was to advise the Palestine Zionist Executive; that it was to act as a health council and that it was to try to coordinate the various medical activities and institutions. This has been a difficulty, as far as we could learn, far from an accomplishment. On the other hand, consolidation would mean simplification, with its resulting economies and opportunities for better performance.

Bicur Cholim Hospital.

The Bicur Cholim maintain an eighty bed hospital and outpatient department in Jerusalem in a modern, recently erected building with good equipment. It has departments of Internal Medicine and Surgery, and on our visits to the institution we found the bed wards quite filled, but a very light attendance in the outpatient department, although we were informed by the director that about seventy-five patients a day apply there for outpatient treatment.

Its personnel consists of a visiting surgeon, interns and house officers. Two graduate nurses and nurses in training furnish the nursing care.

The institution is well kept, clean and wholesome, and offers the suggestion of valuable facilities and space which could be utilized much more fully.

The cost of maintenance is about 35 piasters ($1.75) per day per patient. Its budget for 1926 was $75,858.

Report for 1926.

Patients in hospital	1,434
Outpatients	51,813
Operations	719

Conclusions.

Its facilities could be used to greater advantage in cooperation with the other Jewish hospitals. It should amalgamate in some manner with the Rothschild and the Shaare Zedek.

The Shaare—Zedek Hospital.

The Shaare-Zedek has an eighty bed hospital and outpatient department in Jerusalem for medicine and surgery, as well as a contagious cubicle, utilized by the community for the care of contagious and infectious diseases.

This institution is located on spacious land upon which stands the main hospital, and a few yards away the contagious cubicles.

The atmosphere of this institution is devoutly religious.

The beds are fairly well filled.

We were informed by the director of the institution that the maintenance cost per day per patient is about 50 piasters ($2.50).

Conclusions.

This institution meets the communicable hospital needs of the community.

Its facilities are not used to the fullest advantage.

It should in some form of organization (see summary of conclusions) unite with the Rothschild and Bicur Cholim Hospitals.

The Ezrath Nachim (Insane Asylum)

The Ezrath Nachim has a capacity of seventy-nine beds which are divided into fifty female and twenty-nine male, with a waiting list of twenty-three.

The institution is overcrowded and general conditions must be defined as poor.

Dr. Herman, the administrator in charge, is able, efficient and very anxious to serve the community.

Conclusions.

Owing to the shortage of hospital beds for the care of the insane, this institution is under great strain, trying to meet Jewish needs. This situation is responsible for the overcrowding. Its director is doing the best he can.

The Government has promised to develop increased facilities which are sadly lacking.

Misgab Ladach.

This is an old Sephardic institution located in the Old City of Jerusalem with a bed strength of thirty-four.

It treated 629 patients in its institution in 1925 with a daily bed average of 24.

VOLUNTARY HOSPITALS—1925.

Name and Location of Hospital	Bed Strength	Admissions					Deaths	Discharges	Daily Average in Hospital	Remarks
		Moslems	Christians	Jews	Other Religions	Totals				
Jerusalem										
Ophthalmic Hospital of the Order of St. John of Jerusalem	45	1,347	242	31	—	1,520	—	1,506	38	
St. Louis (French) Hospital	150	397	756	4	—	1,157	32	1,114	40	
Italian Hospital	60	237	127	10	1	375	9	389	21	
Rothschild (Hadassah) Hospital	121	24	16	2,894	—	2,934	165	2,758	116	
English Mission Hospital (London Jews Society)	62	12	75	983	—	1,070	14	1,056	44	
Shaare Zedek Hospital	53	3	—	919	—	922	138	797	38	
Misgab Ladach Hospital	34	—	—	629	—	629	23	604	24	
Bicur Cholim Hospital	70	3	4	860	—	867	71	800	45	
Leper Hospital (International Moravian Society)	30	6	3	1	—	10	5	7	29	
Deaconess (German) Hospital	50	281	495	66	—	842	34	816	31	
Convalescent Home, Moza	30	—	—	42	—	42	—	45	30	
Bethlehem										
Swedish Hospital	36	27	94	—	—	121	2	134	14	(Closed (from (1-9-25
French Hospital	70	273	762	—	—	1,035	33	1,006	38	
Hebron										
Church Missionary Society Hospital	18	236	—	—	—	236	2	245	8	
Jaffa										
Hadassah Hospital	104	—	—	3,577	—	3,577	150	3,380	101.8	
Church Missionary Society Hospital	57	—	—	—	—	491	6	485	17.4	
French Hospital	90	—	—	—	—	1,316	45	1,248	45.6	
German Hospital	20	—	69	—	—	69	4	62	2.8	
Kupat Cholim Hospital, Tel Aviv	13	—	—	225	—	255	—	225	12.6	

VOLUNTARY HOSPITALS—1925 (Continued).

Name and Location of Hospital	Bed Strength	Admissions					Deaths	Discharges	Daily Average in Hospital	Remarks
		Moslems	Christians	Jews	Other Religions	Totals				
Gaza										
Church Missionary Society Hospital	63	—	—	—	—	361	17	339	21.1	
Haifa										
St. Luke's (Jerusalem and the East Mission) Hospital	30	231	147	131	—	509	13	489	13.6	
Hadassah Hospital	52	35	14	2,012	—	2,061	50	2,014	46.6	
Italian Surgical Hospital	30	113	81	69	—	263	11	253	12.2	
German Hospital	25	119	184	468	—	771	10	749	20.3	
Nablus										
Church Missionary Society Hospital	45	780	71	—	—	851	27	837	23	
Nazareth										
Edinburg Medical Mission Hospital	40	411	200	—	—	611	22	591	26	
French (Soeurs de Charite) Hospital	50	298	408	4	—	710	16	701	18	
Tiberias										
United Free Church of Scotland Hospital ...	60	—	—	—	—	836	26	811	41	
Kupat Cholim Hospital	13	—	—	359	—	359	1	357	11	
Safed										
Hadassah Hospital	54	113	18	913	—	1,044	37	996	43	
Ain Harod										
Kupat Cholim Hospital	32	1	—	554	—	555	—	518	25	
Total	1,607	4,847	3,766	14,751	1	23,369	963	25,332	32.16	

The Plunkett System.

Infant Welfare Centers.

Excellent infant welfare centers are supported by the Women's International Zionist Organization, and are conducted in Tel Aviv as branches of the New Zealand Plunkett Society.

Over 1,000 infants are cared for, who made over 10,000 visits last year to the clinics, in addition to which, several thousand visits were made by nurses in the homes.

We visited two of these centers and found a large attendance of mothers and babies. Manual expression is stressed and proper infant feeding taught.

Penny Lunches.

Splendid work in the field of nutrition is being done through the medium of the Penny Lunches which is described in another section of this report. Malnutrition is corrected, proper food and food habits are stressed and a splendid piece of work is carried on.

General.

We do not go into detail about a number of orphanages and agricultural schools for boys and girls which we visited and which contribute to a public health program by teaching health habits to the children.

These institutions are well kept and clean. We regard them as important factors in the future improvement of general health in Palestine.

CHAPTER 11.

SANITARY SURVEYS OF CITIES, TOWNS AND PLACES IN PALESTINE.

We visited all the cities, most of the towns, and the great majority of the colonies in the rural districts. The conditions found were much alike everywhere, and therefore will not be given in detail, but the following are representative.

Jaffa.

Jaffa, as the old port of Palestine, is destined largely to be replaced by Haifa on account of the superior natural facilities of that harbor. Jaffa has a population of about 35,000, of whom 5,087 are Jews, although on account of the movement between Jaffa and Tel Aviv, this number is diminishing and uncertain. The old part of the city is crowded and antique and consequently has unsatisfactory sanitary conditions. Dr. Rankin is the District Health Officer.

Water.

Jaffa, like all the coastal towns, depends upon ground water which is pumped from shallow and deep wells. The city has practically no cisterns for the storage of rain water. The water supply has recently been increased by the construction of two new bores which supply about 130 c.m. per day.

The composition and quality of the water varies greatly according to the exact locality and type of well. The water derived from some of the bores is bacteriologically pure and its chemical constituents render it suitable for domestic use. There are two new pump stations, municipal establishments, of 60 meters cube per hour capacity, to reservoir 200 m.c. capacity, bore 30 m. deep. According to analysis, this water is up to the stated requirements.

Sewage.

No sewer system exists except in the old city at the harbor area where drains are of the same ancient type as those in Jerusalem. These

drains discharge on the shore. The nuisance on the shore front has been alleviated by extending the outfalls into the sea. The other part of Jaffa town is largely supplied with leaking cesspits for which ground conditions are suitable. New buildings are supplied with septic tanks and percolating pits.

A survey of the town has been prepared for the main drainage scheme, and the Municipality is now in a position to call for tenders for the preparation of the scheme, subject to the consulting engineer's report and the provision of the necessary funds.

Immigration Station.

One of the immigration stations of Palestine is located at Jaffa, the other at Haifa. Both are described in the chapter on Immigration.

The Municipal Hospital.

The Municipal Hospital is a good building, admirably located on the hill overlooking the sea. It has 47 beds, 35 of them for general purposes and 12 for infectious diseases. There is one physician in charge with 2 graduate nurses, 10 pupil nurses and a matron: total personnel, 24.

The hospital is open to all races and religions alike, but is patronized by only a few Jews, and those of the better class.

There are four pavilions for infectious diseases, containing 3 beds each, making a total of 12 beds for this purpose. These pavilions were built on account of the epidemic of plague in 1922, when there were 68 cases in Jaffa. The next year, 1923, there were 14 cases. During the last few years there have been no cases. It is an interesting commentary to note that bubonic plague is not a contagious disease, but it was this epidemic that stimulated the construction of these facilities which are now used for other diseases.

It is of more than passing medical interest to note that the body of Dr. James Hodgkin, who described the disease which bears his name, lies buried in Jaffa. He died here while on a visit with his life-long friend, Sir Moses Matefiore.

Jerusalem.

Water Supply.

The water supply in Jerusalem is of fair quality, but meager in quantity and is not distributed to all parts of the walled city. Some of the inhabitants still depend for their supply upon native Arabs who carry the water from the Temple area in bottles of skin on their backs. This method is precisely that used since biblical times.

Part of the municipal supply is obtained from several springs, the waters of which are collected in reservoirs at Wadi Arub, about 23 kilometers south of Jerusalem. These springs furnish only about 700 cubic meters a day. A much larger supply is obtained from the Pools of Solomon, 17 kilometers from Jerusalem on the other side of Beth-

lehem. These three pools have a combined capacity of 182,500 cubic meters, or about 41,000,000 gallons. The impounded water is pumped to the high service reservoir at kilometer 19 and brought by gravity to a distributing service reservoir in Jerusalem. The water supply from the various sources is mixed and chlorinated before it reaches the householder, and there is every reason to believe that in quality it is safe and fairly satisfactory. There is not enough, however, to supply everybody and the distribution is mainly to the newer parts of the city without the wall and to certain places within the walled city where it is practical to bring the water pipes.

This municipal supply furnishes on the average about four gallons per capita. The minimum amount needed for purposes of hygiene and cleanliness is no less than 11 gallons. The difference is furnished to a certain extent by cisterns. Almost every house has a water cistern. There are, all told, 7,300 such cisterns in Jerusalem. Of these somewhat less than half are satisfactory. There is a very large cistern in Haram Sharif in the Temple area, which probably dates back to Bible times, and which has a capacity of 3,500,000 gallons. This cistern receives its water partly from the Pools of Solomon and partly from the rain water from a catchment basin in the Temple area. There are other large cisterns capable of storing a total of 5,500,000 gallons, and the total capacity of the smaller cisterns is 89,000,000 gallons. A survey of the cisterns of Jerusalem was made on May 23, 1921, by the Engineering Department and disclosed a total cistern capacity of 98,000,000 gallons.

The Virgin Spring is in the Valley of Kidron, near where it joins the Valley of Hinon. This is a perennial spring with geyser-like gushes several times a day, doubtless due to the syphon action of the limestone cave formation. It is good water but comparatively small in amount —about 50,000 gallons a day. It is now used by the inhabitants of the Arab village of Siloam, who carry it across the valley. None of it is now used for Jerusalem, although it formerly supplied that city and is of special historic interest. The spring itself was outside the old wall and was covered over to conceal it from the enemy. A conduit was dug out of solid rock, which led circuitously under the wall to the Pool of Siloam, where the inhabitants of Jerusalem drew it up by hand. David offered to make captain any one of the host who would go through this conduit to the city and open the gates. The spring, the conduit and the Pool of Siloam exist today very much as they were several thousand years ago.

Jerusalem needs more water, and there are abundant additional sources of water, either from the Jordan Valley or, better, from Ras El Ain which is the source of the Auja River, north of Jaffa. This source is plentiful, but will have to be raised to stages of some 2,000 feet or more*.

*Recently a scheme has been prepared for bringing in as a temporary measure 200,000 gallons per day from the Ain Farah, supposed to be the site which inspired David to write the Twenty-Third Psalm. This scheme was carried out in the early part of last summer. The pipe line is about 8 miles in length and the water is lifted about 2,000 feet, the pumping being divided into three stages.

The engineering and sanitary details of the water supply of Jerusalem are as follows:

Source of Supply—Springs at Wadi Arub, Ain Derash, Wadi Biar and Ain Saleh.

Arub pump station—9 hours daily supply, 700 cubic meters.

Reservoirs at Wadi Arub—23 kilometers from Jerusalem, and at Pools of Solomon, 17 kilometers from Jerusalem.

Water impounded in reservoirs at site of springs pumped to high service reservoir at Kilometer 19 and brought by gravity to distributing service reservoir in Jerusalem. Capacity, 50,000 gallons.

Secondary reservoir at Tal-Pieth.

Main pipe to reservoir 6 inches in diameter.

Water works constructed by British Army Forces in 1919, taken over by Civil Administration, Public Works Department, in February, 1922, and transferred to Jerusalem Municipality in April, 1923.

Ownership vested in the Jerusalem Municipality.

Treatment—Chlorination by bleaching powder. Application, at the distributing reservoir. No filtration is applied.

Cisterns.

The majority of houses are provided with cisterns of varying capacities which in periods of droughts are of poor service. The town water supply with its reservoirs and pipe lines have been developed the past few years, 1917 to date.

Pools of Solomon.—Located nine miles south of city adjacent to Jerusalem, Hebron Road. These reservoirs are fed by springs and surface water from controlled areas.

Capacity—Highest pool—47,000m³		
Middle " 45,500m³		
Lowest " 90,000m³		
182,500m³=41,000,000 gallons		
Arub Reservoir and Wadi Biar	5,000,000	"
Total	46,000,000	"

Large town cisterns (*estimated capacity.*)

3,200 satisfactory.

4,100 unsatisfactory require replacement by pipe line.

Capacity of cisterns—survey 5/23/21.

Cisterns in Haram Sharif	3,500,000	gallons
Various large cisterns capable of storage ...	5,500,000	"
Smaller cisterns	89,000,000	"
Total	98,000,000	"

Additional supply is obtained from Ain Farah with three pump stations providing 200,000 gallons.

Water is pumped from the Wadi Arub Reservoir to a high level gravity reservoir feeding the town reservoirs. Pools of Solomon pump into the Wadi Arub line direct.

Water supply in general.—Jerusalem Water Supply Board Department.

Average daily supply 1st to 30th May, 1927:

Ain Farah	72,000 gallons	
Ain Arrub	202,000 "	up to 300,000 gallons
Total	274,000 "	

Population—estimated 75,000 or less than 4 gallons per head from the town supply which supplement the cisterns supply; standpipes are provided for the poor.

The ancient Pools of Solomon have been extensively repaired and are now utilized for general storage.

The Arrub and Biar line were constructed by the Army of Occupation in 1917, and has also been overhauled and improved by the Municipality since purchase from the Army.

The supervision of the water supply is carefully guarded by the Department of Health. Continuous bacteriological analysis of water at the various standpipes is maintained.

Chlorination by bleaching powder is carried out at the Reservoir in Jerusalem and a temporary chlorinating outfit has been improved at the Ain Farah line. A satisfactory standard of purity has been maintained to date.

Improvements proposed for Jerusalem Water Supply.

(a) High level reservoir to facilitate purification.
(b) Refrigerating system to obviate scale difficulty.
Thermo-syphon at Solomon's Pools and Ain Farah.
(c) Permanent chlorination at Solomon's Pool.
(d) Filter plant (mechanical filters).

The entire improvements to the present water system are delayed owing to the results awaited from the Mavromatis Concession, who have investigated and have several schemes under consideration. A proposal to bring the water from Ras El Ain the source of the Auja River, Jaffa, is among the favored suggestions.

The following bacteriological and chemical analyses were furnished from the official records of the Division of Sanitary Engineering of the Palestine Health Department.

JERUSALEM WATER SUPPLY EXAMINATION.

Made April 2, 1924.

I. *Bacteriological Examination.*

A. *El Arub Sources.*

Kilo 22½. Springs Nos. 1, 2 & 3, Huge Reservoir (Lactose ferments 1 cc.

Inlet to Huge Reservoir.

Kilo 19. Reservoirs Nos. 1 & 2. (Flaginac B. coli in 1 cc.

B. *Wadi Biar.*

Jerusalem Water Supply Examination (Continued).

Spring Ras el Souri.

(Lactose ferments in 1 cc.
(Flaginac B. coli in 1 cc.

C. *Solomon's Pools.*

1. Middle Solomon's Pool ... Lactose ferments in 1 cc.
   Flaginac B. coli in 5 cc.
2. Inlet to Middle " ... Lactose ferments in 1 cc.
   Flaginac B. coli in 1 cc.
3. Lower Solomon's " ... Lactose ferments not in 5 cc.
   Flaginac B. coli not in 5 cc.
4. Inlet to Lower " ... Lactose ferments in 1 cc.
   Flaginac B. coli in 1 cc.

II. *Chemical Examination.*

Parts per 100,000.

	Cl.	*Hardness Total*	*Perm.*	*Temp.*	*Ammonia free*	*Nitrites*	*Nitrates*
Arub Spring No. I	2.0	22.6	6	16.6	Less than 0.002	Absent	Absent
" " " II	1.6	20.8	8	12.8	—	—	—
" " " III	2.6	28.	7	21.0	Less than 0.002	Absent	Absent
Inlet to Huge Reservoir	2.0	23.	6.8	16.2	" " "	"	"
Reservoir No. I (Kilo 19)	1.8	21.6	5.6	16.0	" " "	"	"
Reservoir No. II (Kilo 19)	2.2	21.6	9.4	12.2	" " "	"	"
Wadi Biar	2.4	24.6	12.	12.6	" " "	"	"
Middle Solomon's Pool	1.8	19.6	6.	13.6	" " "	"	"
Inlet to Middle Solomon's Pool	2.2	26.4	12.4	14.0	" " "	"	"
Inlet to Lower Solomon's Pool	2.0	21.	9.	12.0	" " "	"	"

Physical examination satisfactory.

Mineral Examination of Huge Reservoir (Arub) and Lower Solomon's Pool.

Parts per 100,000.

	Huge Reservoir	*Lower Solomon's Pool*
Chlorine	1.6	1.80
Calcium	5.9	4.65
Magnesium	2.01	1.75
SO_4	1.8	1.74
CO_3	11.8	9.50
Total solids at 180°C. ...	22.8	19.00
Hardness (a) total	22.0	17.40
(b) permanent ...	9.6	10.00
(c) temporary ...	12.4	7.40
Ammonia free	Less than 0.002	Less than 0.002
Nitrites	Absent	Absent
Nitrates	"	"

Jerusalem Water Supply Examination (Continued).

Probable Combinations.

	Huge Reservoir	*Lower Solomon's Pool*
$CaCO_3$	14.75	11.62
$MgCO_3$	4.14	3.55
$MgSO_4$	2.25	2.18
$MgCl_2$	1.44	1.13
NaCl	0.87	1.58
Total	23.45	20.06

The above figures are such as are characteristic for chemically pure water.

Sewage Disposal in Jerusalem.

The town for purposes of this report may be divided into three sections:—

(a) *The Old City within the Ancient Walls.*—An ancient sewerage system exists with an outfall at the Dung Gate which runs into the valley of Silwan. Of the internal reticulation of the sewers little is known. They are large, of rough masonry, with flat inverts carrying storm water and house sewage, and are in various stages of disrepair. Street openings are untrapped and the same applies to house connections, with the exception of public establishments, such as hotels, which have renovated sanitary installations. The sewers there ventilate into the streets or into courtyards and in some cases into houses.

The outfall at the Dung Gate adjacent to the Temple area is a continuation of a main drain in the Tyropoean valley. A short distance from the walls, the masonry sewer has been destroyed and the sewage runs down the hillside in an open channel. It dissipates itself in the agricultural and garden area on the hillside. Under storm conditions it reaches the valley of Silwan.

There are no disposal works in connection with this sewer. Regulations exist prohibiting the use of this sewage for truck gardening. However, at the time of our inspection the truck gardens irrigated with this raw sewage were growing lettuce and radishes.

(b) *Outside the Walls, Southwest and West Areas.*—No sewers exist. Buildings are for the most part supplied with non-leaking cesspits or septic tanks and percolating pits.

(c) *Northern District, Outside the City Walls.*—The Zionist Commission in 1919 spent 10,000£E in providing this area with a main sewer and branches conveying sewage to a disposal plant in the Wady Joz. House connections are trapped and the system is on modern lines. In the older section of this area, such as Measharim, latrines are flushed by hand owing to the water shortage. In the newer developed portions, complete sanitation with flushing tanks is provided. At certain sections of the main sewers flush tanks are installed, but their use has been limited by water shortage. The sewer is also used for disposal of cesspit contents of houses near this area not connected directly to the system. The sewage from the system as it reaches the

disposal works, owing to water shortage is of a highly concentrated nature. The complete purification of the effluent on this account has presented a problem of some difficulty. The existing works are temporary in character, and extension in the present site is not proposed. The complete drainage scheme for the town envisages the removal of this plant and the construction of main disposal works in the Valley of Jehosophat. A scheme is in preparation for the better disposal of the effluent from the works by land irrigation.

The subject is discussed in general under "Sewage Disposal in Towns of Palestine."

Disposal of Garbage and Rubbish in Jerusalem.

The removal of garbage, rubbish and trash is under the direction of a sanitary surveyor, Mr. Clayton, who is an English employee of the municipality. In the old walled city of Jerusalem, garbage and rubbish are scraped together and picked up by hand and placed in bags on donkeys and thence removed to the incinerator, which is just outside the wall on the side of the Kidron Valley. It requires 30 donkeys, 20 mules and 4 trucks to collect and transport the 800 tons of garbage and rubbish that are daily collected. In the narrow streets of the walled city no other method is applicable. There is not sufficient water to flush the streets. Dry sweeping with brooms is in vogue, which adds to the dust. The dryness during the summer season and the intense sunshine are the salvation of the situation. While the method is primitive, it is a great improvement on the Turkish administration, which largely let the stuff accumulate.

This subject is discussed in detail in the chapter on the Disposal of Garbage and Rubbish.

Public Comfort Stations in Jerusalem.

There are five public comfort stations established by the English since the occupation. Four of these are within the walled city and one just outside the wall near the Jaffa gate, under the Tower of David. In addition to these five public comfort stations, there are fifteen public urinals in the old town.

The station near the Jaffa gate was formerly a water reservoir. It now has twelve closets and three urinals and is visited by an average of 2,000 persons a day. It also contains two pay-toilets of American design with a slot machine that unlocks the door for one-half a piaster. The other ten are of the squat Arabic type. This station has no running water, and all the water used is brought by carts. Janitors are in attendance day and night, and keep the place clean by hand flushing. This method is cumbersome, but reasonably satisfactory and is the best that can be done under the conditions. At the time of inspection there was no odor, few flies, no screens.

The introduction of these public comfort stations and public urinals deserves commendation. It is an admirable innovation, for it assists not only cleanliness and decency, but serves as an educational demonstration.

The Leper Home, Jerusalem.

The Leper Home in Jerusalem is maintained by the International Moravian Church, the headquarters of which were formerly in Germany but are now in London. The home was started 60 years ago in the old City. The present hospital was built 40 years ago. It is a good stone building with courts, gardens and sufficient property. It is situated on the present outskirts of the newer part of the City, between the German and Greek colonies, admirably located.

Dr. T. Canaan is in charge of the medical work. The Moravian sisters supervise, cook, nurse and care for the patients and the institution. The patients pay nothing, the entire support coming from the Moravian Church.

This Home is the only leprosarium in Palestine, Syria and Transjordania. It has a total of 70 beds, 33 of which are at present occupied. At the time of our visit on June 20, 1927, there were four Jewish lepers in the institution, and later, July 4, another returned, making a total of five. This, we were told, is the largest number they ever had. This may be because there is less leprosy among Jews, but more likely is due to a disinclination to go to a leprosarium even though it is cleanly, well conducted and admirably managed such as this one.

Of the four Jewish lepers in the institution at the time of our visit: one was from Egypt, and had come to Palestine for asylum, having been driven out; one was from Tiberias, having been born there (an endemic focus); one was from Russia, although he had lived at Haifa and Jaffa; and one was from Jaffa, born in Mesopotamia.

The institution has arrangements for a kosher kitchen which is used if desired. There are no quarantine restrictions. Patients come and go at will, and receive visitors, etc. As long as there are no government restrictions, the hospital cannot enforce isolation.

Dr. Canaan thinks that there are some 90 to 100 lepers in all Palestine. He treats his cases with chaulmoogra oil esters and is getting very good results.

Leprosy is not a serious public health problem in Palestine.

Evelyna De Rothschild School for Girls.

The Evelyna de Rothschild School for Girls in Jerusalem is supported by the Anglo-Jewish Association, presided over by Miss Landau. There are 504 girls between the ages of 5 and 18 years. They pay the nominal sum of one shilling a week. The building is good and clean, and strict discipline is maintained.

Medical inspection of the girls in this school was for a time carried on by Hadassah, which services were withdrawn on account of a difference of opinion concerning the amount which it was thought the school itself should contribute towards the salary of the nurse. The service was then at once efficiently rendered free of charge by the Government.

This institution is supported by the Jews Society of London, and

is under the capable direction of Dr. R. J. Orr-Ewing. It is frankly a proselyting agency but gives admirable medical service. It has 66 beds, 30 medical and 36 surgical. The average daily census is 55, as some of the beds are for private patients and are not always occupied. The total number of patients last year was 1,250.

The average attendance in the outpatient clinic varies somewhat, as there are days on which there is no clinic. Ordinarily, there are about 70, although on some days as many as 200 patients. The total number per year amounts to about 25,000. We visited this institution and found it clean, well equipped, adequately manned, and the service rendered modern and skillful. Practically all the patients are Jews.

Other Mission Hospitals.

The German Hospital in Jerusalem is an Evangelical Deaconesses hospital. Dr. Canaan, the chief physician, showed us about.

The hospital has 70 beds and is run by the sisters. They average about 40 to 45 patients, who are divided into four classes, depending upon their ability to pay. The staff consists of five chiefs of service, as follows: medical; surgical; gynecological; ear, nose, and throat; and eye. The doors of this hospital are open to all, irrespective of race or religion. In 1926, 15 per cent of the patients were Jews. At the time of our visit (June, 1927), it happened there were very few in the hospital.

The outpatient clinic has about 15,000 visits a year; this number, however, is increasing.

The institution is well built, clean, orderly, and makes a favorable impression.

The Italian Hospital in Jerusalem is a comparatively new building of stone, and is attractive and well ordered. It is said to receive a subvention from the Italian Government. The main features of its work are surgical and it has a good reputation. The doors are open to all races and creeds alike.

There is also a *French Hospital* in Jerusalem which contains many admirable features.

The *Ophthalmic Hospital of the Order of St. John* does admirable service and is described in the section on Trachoma and Other Diseases of the Eyes in Palestine.

The Pasteur Institute.

The Pasteur Institute is a private commercial laboratory, known as the Pasteur Institute in Jerusalem, established in 1913 by Dr. A. Beham. At the time of our inspection, they prepared vaccine virus, rabic virus, and also offered diagnoses and bacterial vaccines for private practitioners.

Tel Aviv.

Tel Aviv has had a mushroom growth—the rapidity of its development has caused it to trip over its own heels in its undue haste. We visited Tel Aviv several times in view of the fact that one-third of all

the Jews in Palestine live in and about this district. The population in 1927 was said to be about 38,000, all Jews. The story of its growth sounds like one of the boom towns of Florida. Thus, in 1911 it was only a suburb of Jaffa with 511 souls; in 1919 it had multiplied six-fold to 3,000; in 1922, four-fold to 12,000; and during the next three years shot up to 40,000; and by the middle of 1926 is said to have had a population of 45,000. It is entirely a modern city, but is passing through the sanitary difficulties of most boom towns. The economic distress as a result of the financial crisis increases the difficulty of solving its hygienic problems.

Water.

Tel Aviv, like other communities on the coastal plain and in the Emek, depends upon ground water. The city now gets its water from 5 deep wells, pumped to 2 reservoirs, from which it flows by gravity through pipes to the houses. There is a plentiful supply of water of a good quality. The water from these deep bores is menaced by the many cesspits and soakpits in the city. The wells are deep and the upper layers consist of sand and coarse gravel, which saves the situation.

Sewage.

No sewerage system exists. The sewage is disposed of in septic tanks and percolating pits, and by leaking cesspits in the case of older buildings. In the older part of the town, which is 15-16 years old, the privies are primitive. The township has prepared plans and details of a complete drainage scheme. The commencement of the work, however, awaits the provision of funds and the report of the consulting engineer upon the scheme as a whole. With its adequate water supply Tel Aviv is ready for a water-borne sewerage system on modern lines, and the very existence of this water supply makes the provision of a drainage system a pressing necessity.

Milk.

The milk supply comes from neighboring Jewish colonies in the vicinity and up the valley as far as Afule.

Garbage Disposal.

The garbage is collected daily.

Vital Statistics.

The death rate last year was 15.32. The birth rate was 41.86; infant mortality, 161.52.

Housing Conditions.

There are four barrack sections in Tel Aviv consisting mainly of wooden huts, in which some 8,000 persons live. The huts or shacks are for the most part makeshift and the hygienic and sanitary condi-

tions are primitive and unsatisfactory. The situation is deplorable and is realized by the authorities, but the economic crisis makes it difficult to apply satisfactory remedies. The situation was carefully studied by Dr. Kligler, who made a report.*

The Slaughterhouse.

The slaughterhouse is a good stone building, well equipped, with plenty of water, and is well located in a convenient place on the outskirts of the city. It is kept clean. Here are killed many food animals, especially sheep, goats and cattle, all of which are inspected both by the Government inspector and by a rabbi. Animals used for food are not allowed to be killed in the slaughterhouse but are killed on the beach.

A municipal slaughterhouse is an institution with manifest advantages that might well be copied and taken up by our cities in the United States.

TIBERIAS.

Here we find the grave of Maimonides; the hot springs; the new health resort, Migdal; and the attractive new section of the city Kiryat Shmuel, named in honor of Sir Herbert Samuel, the first High Commissioner of Palestine. Here also we find the new Rutenberg power station, which was in operation at the time of our visit (June 15, 1927); also the new Sweitzer Hospital; and other points of interest. Dr. Itayam is Health Officer of Tiberias, under Dr. Bigger at Nablus.

Water.

Tiberias has a complete water supply system operated with an electric pump station from a short inlet into Lake Tiberias to hill reservoirs. From this elevation the water flows to town standpipes, which are provided for public use. We also learned that a part of the supply came from a spring called Hasha, piped about 1 kilometer north of the town. This water is not chlorinated. There are also 5 gate stations under Government control where the townspeople may draw water direct from the shores of the Sea of Galilee. Such supplies are chlorinated and controlled by the Government.

There was an interesting epidemic of cholera involving 60 deaths in Tiberias in 1918, which was believed to be water-borne as a result of contamination of the lake water. It was the custom to take water from the Sea of Galilee in water jugs (zir). The beach is shallow and the shore water polluted with surface wash, direct defilement, bathing, fishing boats, etc. This, however, was the only supply at this time and the water was carried up to the houses. When the epidemic came, the health authorities fenced off the entire shore line of the city with wire netting, leaving five stations from which water could be taken. These stations were inspected and protected from pollution, and as the carrier left the station, an attendant placed bleaching powder in the zir, or standard oil can, which they carried on their heads.

*We do not repeat here a recital of the activities of Jewish public health agencies as we have given them elsewhere.

Sewerage.

There are no sewers draining Tiberias. In the old city are many leaking cesspits, and in the new area septic tanks and percolating pits have been installed. The system is unsatisfactory and preliminary studies of a drainage scheme have been prepared by the sanitary engineer.

Milk.

The milk supply of Tiberias is from neighboring farms and also from some people who own cows.

The Hot Springs.

The hot springs are on the southern outskirts of the city, not far from the beach. A special examination was made of these springs and the possibility of their development. It seems to us that it will be some time before they can be exploited to commercial advantage on account of their isolation and the fact that they lie about 600 feet below sea level, and therefore it is quite warm in the summer, although the climate is very attractive in the winter season.

These springs belong to the city and the government and at the present time are rented to an individual on a yearly lease for about 300£E a year.

The following story concerning these springs is given as illustrative of the difficulties in developing certain features in Palestine. The Turkish Government gave a concession to one Abdur Nor, living in Beirut. This concession has been confirmed by the British Government. Abdur Nor is said to want to sell the concession at a price. There are plans for a casino, spa, hotel and development on an elaborate scale.

On account of the interest in the water of these hot springs, analyses were made, which are attached, by Chemist Friedman and by the Health Department of Palestine.

CHEMICAL ANALYSIS OF THE HOT WATERS IN TIBERIAS DRAWN UP BY CHEMIST FRIEDMAN.

	Old Baths	*New Baths*
KCl	0.2050	0.1800
NaCl	16.8270	17.0550
$CaCl_2$	8.5200	8.9000
$MgCl_2$	1.4030	2.5000
$CaSO_4$	0.7030	0.7850
$MgSO_4$	0.1800	0.4270
$Ca(HCO_3)_2$	0.2540	0.3050
$Mg(HCO_3)_2$	0.1050	0.1150
H_2SiO_3	0.0185	0.01342
H_2S	0.01245	0.1300
NaBr	0.0014	0.00168
$Fe(HCO_3)_2$	0.0125	
Temperature	58.7°	61.54°
Mineralisation	28.2478	30.3141
Radioactivity	$2\bar{a}4\ 10^3$	

Safed, July 1, 1927.

REPORT ON THE EXAMINATION OF THREE SAMPLES OF WATER FROM THE HOT SPRINGS AT TIBERIAS.

Received on April 14, 1923.

Lab. Nos. 6 - 8.

The results of the analysis of the samples are as follows:—

	6	7	8	
Specify Gravity at 60°F. ...	1.0234	1.0236	1.0235	
Calcium (Ca)	3.42	3.28	3.28	gm. per 1000 grs.
Stronium (Sr)	0.08	0.05	0.11	" "
Magnesium (Mg)	0.62	0.65	0.65	" "
Sodium (Na)	6.70	6.74	6.68	" "
Potassium (K)	0.29	0.30	0.28	" "
Lithium (Li)	Trace	Trace	Trace	" "
Iron (Fe)	"	"	"	" "
Carbonate (CO_3)	0.05	0.05	0.06	" "
Sulphate (SO_4)	0.77	0.77	0.76	" "
Chloride (Cl)	17.91	17.93	17.96	" "
Bromide (Br)	0.23	0.23	0.23	" "
Nitrate (NO_3)	Trace	Trace	Trace	" "
Silica (SiO_2)	"	"	"	" "
Total Solids ...	30.07	30.00	30.01	
Free and saline ammonia ...	0.004	0.003	0.004	parts per 100,000
Albuminoid ammonia ...	0.008	0.006	0.006	" "

These elements and radicles may be set out as follows:—

	6	7	8	
Calcium Carbonate ($CaCo_3$)	0.08	0.09	0.11	gms. per 1,000 grs.
Calcium Sulphate ($CaSO_4$)	1.09	1.09	1.07	" "
Calcium Chloride ($CaCl_2$)	8.52	8.10	8.10	" "
Stronium Chloride ($SrCl_2$)	0.15	0.08	0.20	" "
Magnesium Chloride ($MgCl_2$)	2.30	2.39	2.39	" "
Magnesium Bromide ($MgBr_2$)	0.26	0.27	0.27	" "
Sodium Chloride (NaCl)	17.03	17.13	16.98	" "
Potassium Chloride (KCl)	0.55	0.56	0.53	" "

The samples are clear, colorless waters with a saline taste. They contain small sediments consisting of vegetable and mineral matter.

The samples contain approximately 30 parts of dissolved solids per 1,000 parts by weight, thus being nearly as saline as sea water, which in the Atlantic contains approximately 35 parts of dissolved solids per 1,000. The relative proportions of the salts present, however, differ from those of sea water, there being a smaller proportion of sodium chloride and a greater proportion of calcium salts than are present in sea water.

Safed.

Safed has a population of from 8,000 to 10,000, of whom about 3,000 are Jews. Dr. Taharel Kahatib is the Deputy Health Officer for the Safed District, under Dr. Bigger whose headquarters is at Nablus.

Safed is the principal town of upper Galilee, rests high in the mountains, was a center of Kabbalistic learning during the sixteenth and seventeenth centuries, and has long been considered the best climate in Palestine for tuberculosis. It is high, dry, and sunny, except for the winter season when it is cold and damp.

Water.

Safed gets its water supply from two springs above the city. It is piped to some 12 fountains or taps situated in different parts of the city. This supply being insufficient, every house has a cistern for rain water, which has been made mosquito-proof. Some improvements to the existing water supply have been made, but the quantity is not sufficient.

Sewage.

The old section of the town is served by an ancient sewer, antiquated and uncertain. The outfall has been improved by the construction of a septic tank and percolating pits. Outfalls of several other short sewers have been led into percolating pits to eliminate the nuisance caused by discharge of effluents on the surface of the hillside.

Haifa.

Haifa has a population of 33,783, according to the census taken May, 1927. It is favorably situated at the mouth of the Emek, and has a picturesque and magnificent location on the slope of Mt. Carmel on the shores of the one natural bay on the entire Palestinian coast. When the breakwater is finished, it will have a safe and ample harbor which will make it a good port.

Water.

The water supply is insufficient. Some of the houses collect rain water in cisterns, but most of them depend on shallow wells. There is a serious shortage. The well water is generally brackish and hard, and many of the wells are subject to pollution. There is a spring in the grounds of the Technicum School at Hadar Hacarmel, which supplies about 250 houses in the Carmel area. At Bert Galin, water is pumped to a tank reservoir.

Sewage.

Old Turkish drains serve a small part of the old city down at the bay. Most of the houses have cesspits, a few septic tanks. A complete drainage system has been designed and in a few limited districts is complete, but the scheme awaits the report and approval of the Con-

sulting Engineer, and also is dependent upon the final position regarding the harbor development and whatever system is settled upon for a water supply.

Housing Problem.

There were 709 wooden huts housing 2,897 people in May, 1926, most of these being Jews. Typhus in its mild form is endemic, plague prevailed two years ago, and there are many rats. The housing conditions are not satisfactory and the hygienic situation leaves very much to be desired.

Milk.

The Haifa branch of the Hamashbir Ltd. was inspected. This is a workmen's cooperative dairy. This branch handles about 3,000 liters a day, one-third of which is used as milk, bringing an average of about 3 piastas a liter. The remaining two-thirds is made into butter, cheese and kefir.

The headquarters of this establishment is at Tel Aviv, and there are 16 branches, some of them with bakeries, also workmen's kitchen and dairies. At the Haifa branch there is a general cooperative merchandise store in a connecting building next door to the dairy.

Hamashbir Ltd. handles about 16,000 liters of milk per month, which is sent from Afule to Tel Aviv. In all, some 8-9,000 liters a month are sold in Haifa, and 10,000 liters a month in Tiberias and Afule. None of this milk was pasteurized at the time of our inspection, but the statement was made that it would be when the dairies grew larger. The Haifa branch was not screened, flies were abundant, the dust of the street blew in the open doors and windows, and there was plenty of opportunity for contaminating and infecting the milk by hands and other means.

AFULE.

Afule is one of the newer Jewish colonies. As recently as 1925, it was nothing but a typical Arab village with mud huts and cactus hedges. It is built on land bought by the American Zionist Commonwealth and occupies the central and strategic position for supplies for the Emek. Afule is situated at the crossroads of the railway which runs east and west, and the highway running north and south between Jerusalem and Nazareth. At the time of our visit (June, 1927) it had grown to a population of about 1,100, all of whom are Jews.

We found here an epidemic of malaria, there being during the few weeks preceding the date of our visit (June 13, 1927) upwards of 60 cases, many of which were first attacks, all of the tertian variety.

On a subsequent visit (June 17) with Dr. Lightbody and Dr. M. K. M. Mishalany, we inspected the swamps caused by drainage from the neighboring colony of Balfouria. It was also learned that mosquitoes breed in the Kishon itself, which is a sluggish stream with a small fall and weedy banks. It extends on the south as far as the

mountains of Gilboa, and on the north to the foot-hills of the Galilean range.

At Afule we found that Dr. Tempkin is employed full-time by the Hadassah and that Dr. Harmon is likewise employed full-time by the Kupath Holim. We found that the former mainly looked after cases which occurred within the town itself, while the latter had the surrounding rural area. These two doctors were on terms of friendly cooperation, but we were impressed with this example of unnecessary duplication.

While in Afule, we went out to visit the sites proposed for a new hospital which the Kupat Cholim would like to build in or about this situation. The site first shown us was about 3.2 kilometers from the railroad station on rising ground, towards the boys' school. The other site was about 2 kilometers, just within the city limits. Each of the preceding sites has its advantages and disadvantages. The important question is to decide first whether a hospital should be established at this point in the Valley, and secondly, if so whether it should be built and established by the Kupath Holim. This is part of a larger question of the relationship between Kupath Holim and Hadassah, which is considered in another part of this report.

Nahalal.

Nahalal is a colony which was started in 1921 in the Emek. At the time of our visit, the summer of 1927, it had a population of about 720 persons, consisting of over 100 families. It is interesting from many points of view. The colony has a novel oval arrangement. When the Keren Kayemeth acquired the site of Nahalal in 1921, it was notorious for its malarial swamps. The reclamation work has been carried on so thoroughly that now very little of this disease remains. This is a good example of preventive work for which the Malarial Research Committee deserves special commendation.

Nahalal is a typical example of the Moshav Ovdim, a small-holders' village, where, under self-imposed rules, no hired labor is permitted for domestic or farm work. Though each farmer, unlike the farmer in the Kvuzah, retains his complete autonomy, there is a high degree of voluntary cooperation and mutual aid. A uniform plan of mixed farming is followed out on each of the 75 plots, consisting of 100 dunams. Nahalal, whose inhabitants are drawn mostly from the ranks of the pioneer laborers, some of whom have worked in Palestine for 20 years, has already attained the paying stage.

The resident medical work is looked after by the Kupath Holim, Dr. Fishel, full-time physician, in charge. There is a general clinic and pharmacy which is visited by about 30 patients daily. The nurse assists in 40 to 50 dressings and minor surgery a day.

There is a nurse for the school population of about 120 children.

Nahalal is a very good example of one of the young colonies which have sprung up in recent years under more or less unfavorable conditions and without proper preparation. It has a fair water supply, but inadequate arrangements for the disposal of sewage and wastes. The pail and pit system is in use: some of them are clean, some quite

filthy. None are screened against flies. Rubbish and garbage lie about, flies abound, rats and mice are plentiful. The entire place needs a sanitary house-cleaning and there should be a sanitary inspector to look after these matters, which is one of the essential features in the prevention of typhoid and dysentery.

One of the conspicuous buildings in Nahalal is a two-story girls' agricultural school, maintained by the Women's International Zionist Organization (W.I.Z.O.), with the assistance of the Keren Hayesod. There are about 60 pupils and 6 in the faculty of the school, which devotes itself mainly to agricultural teaching of a practical sort. There is also some classroom study of theory. The curriculum is 3 years and the pupils are mainly between 18 and 25 years old. They are sturdy, sun-browned, bare-footed girls, who work hard in the fields and also do housework, including cooking and cleaning.

The cleanliness, order, discipline and industry of the school and the earnestness of the Nahalal group are impressive.

Hedera.

Hedera is one of the largest of the old settlements and is especially known for its dairy products and a nearby eucalyptus grove. It is on the coastal plain near the sand dunes and has a special malarial problem. It is 37 years old, and at the time of our visit in June, 1927, it was said to have 1,510 inhabitants. The place lacks good roads and pavements and on account of the sandy nature of the soil, the going is rather heavy. Oranges are grown here and there is a dairy in which are made cheese and butter; no milk is shipped.

The water is obtained from a well which is 15 meters deep, and seems sufficient in quantity for the present needs and satisfactory in quality. The place needs a drainage system for sewage.

Hedera was one of the worst places in Palestine so far as malaria was concerned,—blackwater fever even prevailed here. There were many deaths. The swamps are about a mile and a half away. The creeks and wadis were drained and the water from one swamp was pumped beginning the end of April, which shortens the malaria season. In addition to the engineering features, it is also necessary to treat the Bedouins in the neighborhood with quinine and, furthermore, to catch adult mosquitoes in houses in order to keep the disease in check.

There had been 40 new cases of the disease in June. This has been one of the most difficult situations which the Malarial Research Unit had to combat. It now has matters well in hand, although there is still much work to be done. Even when the malaria is controlled, perennial work will be needed to maintain the district free of the malarial mosquitoes.

The Kupat Cholim maintains a clinic in Hedera, which is patronized by 600 members, involving 800 to 900 beneficiaries. There is also a hospital with 12 beds, all of which were occupied at the time of our inspection. Most of the patients in the hospital had malaria or dysentery—two preventable diseases. It was the general belief that more hospital beds were needed for the town, but it would seem better

administration to use active preventive measures so that they would not be necessary. Last year during the typhoid fever epidemic, Hedera had only 4 cases, but it had much dysentery and enteritis.

CHAPTER 12.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

We spent six weeks in Palestine during the months of June and July, 1927, making a sanitary survey from Dan to Beersheba. We also visited the neighboring regions of Transjordania, the southern desert lands bordering on Egypt and parts of Syria in order to have a better understanding of our problem. This report is based upon personal observations and studies of official and other reports bearing upon the health and welfare of the Jews of Palestine.

We have a large volume of data in the shape of official documents and special reports, some of which were prepared especially for us, which form the background and the authority for many of the statements made in this document. All the forementioned papers are on file and accessible to the Commission and to others interested. They are not presented here because they are of such bulk and go into such detail that their inclusion seems inadvisable.

Introduction.

We found Palestine a country of promise and possibilities so far as health is concerned. Palestine is a little California and could be made just as healthy as California. It is now in the stage of privy sanitation which all pioneering countries pass through during the course of their development and modernization. The problem of public health in Palestine is largely an economic one, for the building of adequate water supply systems, the installation of good sewerage and drainage measures, and the establishment of other modern sanitary improvements are very expensive. The intelligent people who now live in Palestine do not need to be told that their cities should be cleaned and canalized; that swamps should be drained; that nuisances should be abated; that flies and dust should be suppressed; that diseases should be prevented; that hospital and health service should be improved; that playgrounds and schools should be multiplied; and that health administration should be made more effective.

Our study of the situation impressed us with several factors that

will delay or handicap the work of improving the health of the population of Palestine. The first of these is the great amount of illiteracy and blind adherence to traditions that are age-old. In going through the length and breadth of the Holy Land, one is impressed by the fact that many people living today use the same primitive unsanitary methods and have the same elementary hygienic habits that were in vogue centuries ago. This is true to a certain extent in the cities, but more especially in the rural sections. The Bedouins live very much as the nomadic tribes did in biblical times. A large part of the population are intensely superstitious and adhere with tenacity to doing things the way in which their forebears did them. Change along the lines of sanitary improvements depends upon a diffusion of knowledge and correct understanding of the hygienic habits of living, in accordance with the discoveries of modern science. It is therefore evident that this phase of public health education will require time and patience and will involve changing the sanitary habits of a large proportion of the entire nation. Experience has demonstrated that the best way is to start with the school children who are the citizens of tomorrow, but even today they carry the message into the home. While the difficulties are great, they are not unsurmountable and the very difficulties make the task so much more attractive and add to the rewards of achievement.

In view of the ignorance, superstition, apathy and illiteracy of a large part of the population, health progress in Palestine will cost more money than similar work in more favored communities. In studying the budgets of even the most intelligent communities, we find about fifteen times as much spent for education and five or six times as much for police protection as for health. We also observe the significant phenomenon of a definite relationship between the amount of money spent for public health and the amount of disease of a community. This is well expressed in the popular saying, "Public health is purchasable. Within natural limitations a community can determine its own death rate."

Health work in Palestine will be more expensive than with us on account of the first cost of building water supply and sewage disposal systems to take care of these fundamental requirements in any health program. Furthermore, in considering the distribution of the financial burden and the problem of an adequate public health program, we must remember that in communities with a high average income the individual is not so likely to need assistance in the obtainment of medical service, for which he can usually pay himself, and that health conditions, because of this economic relationship, will be better. In poorer communities, the economic factors operate to increase disease and are at the same time a force in the failure to support by local taxation an adequate public health budget. Palestine is passing through that stage of its existence in which the budget must seem disproportionately large to accomplish results. These results, however, will be abiding. In Palestine, therefore, the obligation is upon the Government, but the burden is so great that it needs the support of beneficent individuals to give the country what it deserves, needs and prays for.

Admirable work has been done throughout Palestine in the prevention of certain infections, notably malaria and trachoma. The intelligent and energetic activities in these directions deserve special commendation. It is also pleasing to note that the prenatal and infant welfare services so admirably conducted by the Hadassah have made deep cuts in the maternal and infant mortality. We believe that the next attack should be upon typhoid, dysentery and the diarrheal infections, because they are prevalent and preventable; and that while Palestine needs more and better fever hospitals for the care and isolation of patients ill with contagious diseases, the emphasis should be laid upon prevention to keep the people out of hospitals.

We found that over $1,000,000 is being spent on health by the Jewish agencies with a Jewish population of about 158,000 souls in Palestine. This is over $6.00 per Jewish capita per year. Our report endeavors to point out just how this money is expended:—Whether the health work carried on is important and necessary. Shall the activities of the voluntary agencies become the obligations of the Government? Is the Government carrying on an adequate public health program?

We were favorably impressed with the organization and the personnel of the Health Department of Palestine. We found an able group carrying on the best traditions based on English practice. All the health officers with whom we came in contact fully realized that more could be accomplished if more money were available. The appropriations for the past few years were as follows:

1923-1924	£E93,258
1924-1925	82,423
1925-1926	84,481
1926-1927	96,679

It was the unanimous testimony of all those who saw the deplorable sanitary conditions of Palestine when the British Government took charge under the mandate that a marked and steady improvement had been accomplished step by step and year by year. We saw this forward motion in progress during our visit, and have every reason to believe it will continue.

We focussed our attention upon the health of our people but studied the hygienic situation of Moslems and Christians as well as Jews, for we know full well that the sanitary isolation of one group in a mixed population is impossible. Infection knows no racial boundaries; disease in one menaces the other.

The criticism is often offered not only by those in Palestine but by returning tourists that the death rate is high, that disease is rampant, that the flies are horrible, that the hotels are poor, that the cities are not tidy, and that the general sanitary and hygienic conditions are unsatisfactory. We feel that these criticisms are not just in view of the fact that there is a slow, gradual, steady upward progress in many directions. It seems fairer to compare Palestine today with the United States of about thirty years ago, when we also had epidemics of typhoid fever and similar insanitary conditions. It should be remembered that our great strides in health have been promoted in large part by

the great increase in wealth of our country. Palestine is small and poor and therefore needs help, time and patience.

It soon became clear to us that during the early stages following Turkish misrule, many different agencies undertook many different functions and that there arose a certain amount of overlapping. In particular we found that certain agencies were carrying on what seem to us to be governmental functions. This at the time was necessary owing to the emergency following the war. We now believe the time has come for consolidation and better cooperation. We particularly studied the work of some of the volunteer health organizations with reference to this viewpoint and we believe that they should gradually withdraw from some of their activities, passing them over to the Government. On the other hand, to replace those dropped, the private agencies could and should take up other activities which press for relief. Furthermore, we found in Palestine, as one may find anywhere, that efficiency could be promoted and economies practiced by consolidation on the one hand and cooperation on the other.

Moses stressed the importance of cleanliness and laid down rules for prevention of disease. The Levitical laws give in detail many health commandments that are sanctioned by modern scientific researches. Many of these, however, are honoured more in the breach than in the observance.

Climate.

Sunshine, temperature and humidity have a well known influence upon well-being and efficiency. Climate directly and indirectly has a bearing upon health. The rain, heat, swamps, marshes and wet lands favor malaria; the dry rocky soil prevents the development of hookworms. The want of an abundant water supply hinders the prompt and proper disposal of sewage and thereby favors typhoid fever and dysentery. In many other ways health is influenced for good or bad by climate. This is quite evident in Palestine where on account of the unusual diverse climatic conditions compressed within a small area, we find diseases of the tropics as well as those of temperate and cold climes.

The climate is healthy and favorable for work and play. Many find it stimulating. On the other hand, there is a certain monotony in the succession of fine warm sunny days during the long dry season when the weather is sure to be good. A notable effect of the climate seems exercised upon the nervous system and mental response. It develops races of mankind who are keen, active, emotional and characterized by a capacity for bursts of energetic action.

Palestine is a miniature California. It is about one-twentieth the size, but remarkably analagous in topography, climate, and other features. They both have a wet and a dry season and similar temperature and humidity records. In both places the coastal plains, the hills and valleys resemble each other in a curious coincidence. Both are more dry and arid in the south where they join the desert lands. Both have similar problems of water shortage and need of irrigation in places.

In the cold season Palestine is wet and chilly, especially in the hills. In the dry season there is a succession of clear dry days with glorious sunshine and considerable dust. The sunshine, dryness, dust and other

characteristics of the climate have a direct influence upon health and the diseases that prevail. Small as Palestine is, it has a great variety of climate.

Rainfall.

The average amount of rainfall is 25 inches, but this varies very much from year to year and also from place to place in Palestine. Only about 6 inches fall near the Egyptian border, while there may be as much as 40 inches in the northern part of the country. Most of the rain falls during the cold winter months of December to March. The last two rainy seasons were unusually dry, so that the country suffered acutely from lack of water in the dry season. The amount of rainfall and its distribution have a very definite influence upon malaria, and are fully discussed in the report.

Temperature and Humidity.

Each division of the country has a distinct temperature and humidity quite different from any of the others. In general, the hill country has a moderate temperate climate and the coastal plain is subtropical, while the Jordan Valley, especially the region about Jericho and the Dead Sea, is distinctly tropical.

Winds.

The prevailing winds are quite constant and fairly uniform over the entire land. They usually blow from the west. Occasionally the winds are easterly, and coming from the desert they are hot and dry, and often bring a fine dust or sand which makes it unpleasant, and when long continued almost unendurable. There is a tradition that the east wind blows for 50 days each year, and is therefore called "hamsin."

Food and Diet.

The diet of the people of Palestine varies with racial and religious customs, with economic strata, with place, season and other circumstances. In the cities and suburban centers, those who can afford it have a diet that is mixed and adequate. The staple articles are rice and mutton, grapes, figs, oranges, melons when ripe, and vegetables in season, the most common being cucumbers, vegetable marrow, tomatoes, egg plant and beans. The better circumstanced have mutton, veal, fowl and meat of other food animals. There is abundant food in the sea, which is available to all who are within reach of the coast or near inland waters. Cow's milk and goat's milk are used as part of the diet almost everywhere. Eggs are available for those who can afford them. Fat is obtained in the form of clarified butter fat, olive oil and mutton fat. In the poorer, and chiefly in the rural, sections, and especially among the Arabs, the diet is limited and often unbalanced. When vegetables are abundant they are eaten in large quantities. Durah bread, a variety of maize, and leben, a kefir or fermented milk, constitute the chief articles of diet for many. Food is often prepared by primitive methods and eaten by hand.

In the Jewish settlements food conditions are better but also variable. The settlers prepare their food according to tradition or notion and largely in accordance with the country of origin. During our inspection in most of the rural colonies, the quantity and quality of food served from the communal kitchens was good. We were there during the season of plenty.

The storage and preservation of foodstuffs are not yet practiced to any appreciable extent. Large refrigerator capacity is needed, where foods may be held over from the seasons of abundance to the seasons of scarcity.

The problem of a balanced diet in the modern sense is not understood among the people and education along these lines would serve a good purpose.

Milk.

That the Promised Land would "flow with milk and honey" seems almost to be realized, but the quality of the milk used is far from satisfactory. The collection and distribution is not well organized and pasteurization is not practiced. The first pasteurizing plant in all the land was being installed just as we left. The sanitary control is inadequate. Very little ice is available to cool the milk. Through long experience the people have learned to boil the milk used in the household, and this is said to be a universal practice, although it was not possible to confirm this statement repeated by many. It is probably correct in the main for the reason that it is common practice, learned by experience in all warm countries; otherwise, the milk will not keep in the absence of ice. It is very likely that some of the typhoid and dysentery and diarrheal diseases, as well as all the Malta fever, are milk-borne.

There is nothing special or peculiar about the milk question in Palestine: it is universal in all countries where milk is used, for it is one of the most essential and useful of our standard articles of diet; in fact, the United States is quite in advance of all other countries in insisting that milk must be kept clean and cold and delivered promptly. Even England and the more advanced countries on the Continent do not have the same control of the milk supply, nor do they insist upon pasteurization as is required in so many places in the United States.

The general milk supply of Palestine comes from farms and farming colonies; a considerable amount of goat's milk is used. In our journeying through the farming colonies, we found fairly clean conditions in the barns and some interest in the health of the cattle, but as a general rule, judged by our standards, we would call the conditions unsatisfactory. We could find no evidence of any organized or systematic milk inspection service.

The Control of Foodshops and Unhealthy Trades.

Under Turkish law, a municipality had certain duties in regard to the control of public establishments. In the early days of the British administration, the Department of Health drafted a by-law which was adopted by all municipal councils, specifying the trades and industries

requiring regulation from a health point of view and laying down a procedure of control based upon licenses issued by the municipality. The license is issued only upon compliance by the licensee of conditions which are laid down by the Medical Officer of the Health Department. The procedure was a new one and is gradually being put into force. The licenses are renewed each year and periodic inspections are made during the year; defaults found are the subject of a warning notice. The present scheme is applicable only in municipal areas or in places where a local council exists. A trade affecting the public health, which is without the municipal boundaries, is legally not under control.

Water Supplies of Palestine.

Water is one of Palestine's chief problems. Water is one of the essentials of health, comfort and cleanliness. It is therefore given special consideration in our report.

The Jordan River, Lake Tiberias and the Auja River are the chief sources of surface supply. For the most part the plains depend on wells and the hills on springs or rain water cisterns.

Parts of Palestine have too much water and are low-lying, swampy and malarious. The greater part of the country, however, is high, mountainous, dry and arid. The rainy season is brief and the amount may fall far short of the average. As a result of such shortage, the streams soon dry up, the ground water level is low, the springs run short or fail, and difficulty, suffering and disease follow in the train. This is the story of the past few years. That the water problem is not a new one may be inferred from the great value placed upon a spring in biblical times.

There is actually enough water in the country to supply all the needs of health. The problem is one of storage and distribution. This is again an economic question which is having a start in the Rutenberg scheme, and we trust in time will be solved and the needs of all parts of the land adequately met.

At the time of our visit, Jerusalem and Jaffa were short of water; Tel Aviv had an ample supply; Haifa, a serious shortage; Acre, a plentiful supply from the ancient springs of Kabra.

Most of the cities and colonies in the coastal plain and the Valley of Esdraelon have only to dig or bore a hole in the ground to reach a water supply. Even cities such as Tel Aviv derive their water supplies from this source. Judea and Galilee are rocky and mountainous and conservation of the rain supply in natural reservoirs is difficult owing to the geological formation. It can, however, be done as was demonstrated years ago in the Pools of Solomon.

The hilly regions of Palestine are mainly of limestone formation and this has a distinct bearing upon the possibility of water contamination. It is a well known axiom in the domain of water supplies that springs and underground waters in a limestone region are always of questionable hygienic value because of the likelihood of invisible, distant and unsuspected sources of pollution. On account of the sparsity of population in many parts of the hills, there are a number of splendid springs in Palestine.

The Engineering Division of the Department of Health is making a sanitary survey of the water supplies of Palestine. Most of the localities have been studied and are efficiently administered as far as the limitations of the supply permit. Chlorination is generally used in the form of bleaching powder.

Colonies and villages have access to a grant-in-aid of £E400 to improve their water supplies. This is a loan by the Government which is approved if certain conditions are met. Some Jewish colonies have taken advantage of this privilege, but most of them look out for themselves in their own way and from resources other than Government money.

We found no evidence of water-borne disease anywhere in Palestine. It is our opinion that the supplies are satisfactorily controlled and in the main safe. We found this part of the work of the health office well administered. The needs of each city are given in detail in the body of our report.

Sewage Disposal in Palestine.

From the standpoint of prevention the proper disposal of the wastes from the human body is of prime importance. The unsatisfactory and primitive methods that have been in vogue for centuries are still in use in most parts of the land. In many places not even privies are used. Not a single city or town has a complete sewerage system. Palestine is passing through those stages of imperfect sanitation in which all pioneering and developing countries find themselves during the transitional period. The rapid growth of Jerusalem, Jaffa, Haifa and especially Tel Aviv has brought about an acute emergency in the problems of drainage and sewage.

The problem is an economic one and should advance towards solution as fast as means will allow. The cities are now being surveyed and studied and plans are being prepared for modern and adequate sewerage systems. All such plans must first be approved by a consulting expert in England.

The Jewish colonies need better methods of sewage disposal. The imperfections in this regard are one of the sources of typhoid fever, dysentery and diarrheal diseases. It would be much better to prepare the site for a new colony with adequate drainage before it is established. We recommend this.

The Disposal of Garbage and Rubbish.

Nuisances and Cleanliness.

Palestine still has a long way to go before it can be given a clean bill of health. Palestine needs good house-cleaning as part of its program towards health and decency. Long experience has taught the lesson that cleanliness offers a protection against disease, that clean surroundings are apt to be free from infection, and that clean food is apt to be safe food. Long ago Moses emphasized the importance of cleanliness, which is still the heart and soul of sanitation.

Jerusalem and some of the other cities have systems for the collec-

tion of garbage and refuse. Sanitary surveyors or sanitary inspectors should also be appointed for the smaller towns and colonies in order to look after the collection and disposal of garbage and rubbish, the cleaning of streets, the abating of nuisances, the use of screens, the sanitation of houses, the installation of plumbing, the care of privies, etc.

Practically all the colonies and smaller places lack an efficient system of scavenging. This is one of the needs of communal housekeeping. This work should be in the hands of sanitary inspectors who are trained in the problems of preventing and abating nuisances. Such work includes the abolition of fly breeding, mosquito multiplication and rat propagation. It is well worth the time and energy spent, for organic cleanliness has both a direct and an indirect bearing upon health.

Dust.

Palestine suffers from the dust nuisance common to all places that have long, dry, hot, windy seasons. The dust is more than a nuisance, for it is irritating and a menace to health. Most of the dust is whipped up by traffic on the roads, and much of it can be controlled by the use of oiled surfaces.

Flies.

All travelers throughout the Levant are impressed with the great abundance of flies. They breed in manure, organic waste, and filth of various sorts. This is a problem of cleanliness and is closely associated with the proper disposal of manure, garbage and refuse. Flies breed in the manure from the domestic animals which are kept within the city limits and propagate to enormous numbers on account of the prolonged season. Flies convey infection and probably are responsible for some of the typhoid fever, dysentery and intestinal diarrheas, as well as for the transmission of some eye diseases. The sandfly is the intermediate host for both pappataci fever and leishmaniasis; the former was epidemic during our visit, the latter prevails but not in sufficient amount to be a serious health problem.

House Sanitation and Plumbing.

The types of houses in Palestine vary from the tents of the nomad Bedouins and the huts of the village Arabs to the modern home. Some of the better and newer houses in Palestine are as nice, clean and satisfactory as modern dwellings in the United States or in England. Such, however, are rather the exceptions, because for the most part the housing conditions are primitive and elemental. They are crowded and poorly ventilated, especially those in the congested parts of the cities, and particularly those of the Arabs both in cities and villages. Here fuel, fodder, food and cooking, animals and human beings, young and old, are crowded together in one small, tight enclosure.

It is a curious fact that the plumbing regulations have been transferred verbatim from England to Palestine. They should be modified and adapted to the climate and conditions of the country. Furthermore, English plumbing regulations are conservative and expensive. The

tendency in the United States is to simplify the requirements without in any way sacrificing safety. We recommend this to the attention of the health authorities.

Under the vigorous policy of the Department of Health, a distinct improvement has been made during the past five years in introducing modern house sanitation. Public establishments, such as hospitals, hotels, schools and institutions, have been the first to put in modern installations. This is an admirable demonstration that serves a useful educational purpose.

Vital Statistics.

The vital statistics of a community are an index of its public health and serve as a guide for its public health service. Vital statistics have been aptly termed the bookkeeping of humanity. They tell us whether the health administration is effective or not, and they are the sign posts which give direction.

In Palestine only a beginning is claimed. The English took a census in 1922 and there has been no count since, despite considerable movement in and out, to and fro. The Bedouins, of whom there are many thousands in Palestine, have never been counted and are omitted from the census and also from all statistics of births, deaths, marriages and disease. The figures for the Arabs are often quite uncertain because the notification of disease is incomplete and diagnosis often inaccurate, which make the figures and rates unsatisfactory. The figures given for the Jews and Christians are fair approximations.

Despite the short-comings, there are figures that give a reasonably correct picture of the amount and spread of malaria, typhoid fever and other diseases, and of excessive infant mortality. The infant mortality rates cannot be regarded as accurate, owing to incomplete reporting of births. Nevertheless, they are so very high that it is clear that they have a significance which is confirmed by personal observations during our survey.

We made a special study of infant mortality because this is the most sensitive index we possess of social welfare. If babies were well born and well cared for, their mortality would be negligible. Furthermore, it is quite clear to students of preventive medicine and social welfare that immediate and successful results may be obtained in saving lives of many babies and children by well tried methods.

The Diseases of Palestine.

Wherever we went we visited the hospitals and clinics and took cognizance of the diseases that prevailed. We consulted with the doctors in private practice as well as the health officers concerning this problem. In addition to this we obtained from official sources available figures concerning the important diseases of Palestine. From a wealth of material at our disposal, we give the following facts which we believe are of both interest and importance for the purposes of this report.

Typhoid Fever, Dysentery and Diarrheal Diseases.

The control of typhoid fever, dysentery and infectious diarrheas, is the pressing sanitary problem of Palestine. Despite the fact that these diseases are readily preventable, they have been unduly prevalent throughout the land, indeed, they rose to the magnitude of serious epidemics during the past few years, especially among the Jewish colonies in the Emek, and also at Tel Aviv, Jerusalem and many other places. The distribution was quite unequal.

The reason for these outbreaks is quite clear to the sanitarian. The tinder was gathered, the fires lit, and the conflagration was bound to come. Typhoid fever and other intestinal infections are always a scourge in pioneering regions with unsanitary conditions. We found Palestine in just this stage of development.

Our studies of the situation convinced us that very little if any of the typhoid fever in Palestine was water-borne, for the water supplies, inadequate as they are in most places, are controlled or chlorinated. Furthermore, very little of the infection was spread through milk, for the reason that most of the milk is boiled before it is consumed. The disease, then, was spread largely through contacts and carriers and in the many miscellaneous ways in which this filth disease flourishes. The long hot summer season with the abundance of flies adds to the menace. The insanitary disposal of sewage causes a concentration of contagium. Added to this, we found a general lack of understanding or appreciation concerning the disease and its mode of transmission, so that the unhygienic customs of the people courted rather than prevented the fever. Furthermore, thousands of fresh susceptible immigrants arrived in Palestine during the years in question, and these people added fuel to the flames. This is the story of typhoid fever in all countries during the developing stage. The United States passed through the same experience.

It grieves the heart of the sanitarian to see fever-ridden communities, unnecessarily stricken, for we know that typhoid fever, even under these conditions, is preventable.

In contrasting the typhoid and malarial situations, we found the weight to balance sadly against the former. An intelligent and energetic attack on the malaria problem had controlled this disease and was keeping it well in check. Furthermore, the people well understand its mode of spread and its methods of prevention. On the other hand, we found indifference and ignorance concerning typhoid and dysentery, and the need of a similar campaign of education with communal house-cleaning was clearly indicated. We believe that there should be a united and cooperative drive against typhoid fever, dysentery and infectious diarrheas, which is sure to bring rewardful results.

Everywhere we went we found the hospitals clogged with typhoid fever and dysentery, and the demand everywhere was for more beds for persons who needed medical and surgical attention. In many places there were not even enough beds to look after the typhoid cases. We were told that this has been the situation during the summertime for several years past. We believe that well directed preventive measures will cure this situation. In other words, the modern attitude is to keep

people out of the hospital by preventing typhoid and dysentery. While many communities in Palestine need fever hospitals and isolation wards, we think more emphasis should be placed upon prevention.

It is estimated that, in 1926 which was the high tide of the epidemic, there were all told in Palestine about 1,500 cases. Of these, 180 occurred in the Emek; Ain Herod had 100; 170 were treated in the Government Hospital at Haifa. During this same year 594 cases were treated in the various Hadassah hospitals; 349 at Jaffa and Tel Aviv, 109 in Jerusalem, 83 in Haifa and 53 in Safed. In other words, the Hadassah hospitals cared for more than one-third of all the cases which occurred during the epidemic last summer.

A notable outbreak occurred in Tel Aviv, approximately 500 cases, in 1925, which stretched into January, on account of the large amount of immigration, and there was a second outbreak in 1926. Here the disease found easy prey in a susceptible population on account of the overcrowding in primitive insanitary houses and temporary barracks. It was found that about 80 per cent of the cases in Tel Aviv were among recent immigrants, huddled together in the makeshift barracks and huts described in the report.

A large number of persons were inoculated with the typhoid prophylactic vaccines and thereby protected. Little work, however, was done along the lines of preventive measures striking at the root of the trouble, which includes proper disposal of sewage and sanitation of the environment. The means of controlling typhoid fever are so well known that they are not repeated here, and it is hoped that concerted action and a cooperative drive by official and volunteer agencies will be made against this preventable scourge.

Dysentery.

The story of dysentery is a counterpart of that of typhoid fever. These two diseases have similar modes of transmission and similar means of prevention. Most of the cases we saw were diagnosed as the amebic variety, but we are inclined to think there was much more bacillary dysentery than was recognized. A campaign against typhoid fever would at the same time control dysentery and the infectious diarrheas.

Cholera.

The last epidemic of cholera in Palestine occurred in Tiberias in 1918. There were about 60 deaths. The disease was believed to be water-borne and due to infection of the Sea of Galilee. The control of the beach, the chlorination of the water and other effective measures put a stop to the outbreak and no cases have occurred since.

The potential danger of its reintroduction lies in the return from Mecca of the annual Moslem pilgrimage. The Pilgrims from Palestine are protected by anticholera vaccine prepared by the central laboratories of the Health Department.

The real and enduring way to control cholera is by clean water, fly suppression, protection of food supplies, control of carriers and other measures of personal hygiene and municipal sanitation applicable for

the prevention of typhoid fever. A well organized community needs not fear cholera, and Palestine could readily make herself cholera-proof.

Malaria.

The malarial problem in Palestine has been handled efficiently and effectively. The situation was first studied by skilled experts, as a result of which much time and money were saved in the end. From the beginning the attack was concentrated upon the particular mosquitoes responsible for the transmission of the infection in Palestine, and their special breeding places. The good results in some places will be abiding, for the breeding places have been well nigh abolished. On the other hand, the warning is given that malaria will overrun Palestine again if the work is not continued and extended. We were especially impressed with the good results obtained by the educational propaganda, which is such a useful instrument of control. We found everywhere we went throughout the land that the intelligent people generally had a clear understanding of the disease, its mode of transmission and the best means of prevention.

The worst places for the infection have always been the coastal plain, the Emek and the whole Jordan Valley. The only serious malarial foci left are the Hule district, where control is not economically practicable at present because it requires extensive and expensive drainage operations in a region that is sparsely inhabited; and the Jordan Valley, where the disease is not yet controlled. During our visit in the summer of 1927, we disclosed an epidemic of malaria at Hedera and another at Afule. Work in progress should soon control both these foci.

Of the three principal kinds of malaria, benign tertian is very common and estivoautumnal is frequent and prevails especially in the late summer and fall.

There are four anopheles mosquitoes that act as effective vectors of the malarial parasite in Palestine: *A. bifurcatus, A. elutus, A. sergenti* and *A. superpictus.*

It is believed that the malarial mosquito in Palestine flies two to three miles on the wing, whereas our malarial mosquito seldom travels over a mile. This difference may be due to the fact that in Palestine a mosquito has trained itself to fly longer distances to find a suitable place to lay its eggs and also to find its food.

The Spleen Index.

All children attending Government schools receive a general medical examination on entering the school, in the middle of their school career, and before leaving the school. During these examinations, splenic enlargement is looked for as a routine practice. The amount of malaria as indicated by the spleen rates shows a steady reduction.

Summary—Prophylaxis.

The methods used to control malaria have been based on sound principles, and while not novel in practice have been unique in many of

their details. In some cases the swamps have been pumped, in others drained by ditching, and still others have been controlled by ingenious engineering expedients. Breeding places that cannot be abolished are sprayed, mainly with arsenic.

Quinine prophylaxis has been a failure here as it has been almost everywhere else, for it is expensive and results are not enduring. The disease reappears as soon as the quinine is stopped. Quinine does not prevent infection, although it does in many instances control the development of clinical symptoms by keeping down the number of parasites in the blood.

Effective screening against mosquitoes and also against flies was the exception throughout Palestine during our visit. While this is in part an economic problem, it is also a question of education, and we believe many cases of fever could be prevented by a better understanding of the use of house and bed screens.

Trachoma and Other Diseases of the Eye.

Everyone visiting Palestine and the countries of the Levant is impressed with the great amount of eye damage, which is so frequent as to be conspicuous. The horrible sight of babies with fly-pestered eyes attracts the attention of all tourists. Trachoma is prevalent and so also is conjunctivitis and inflammation of the eyeball itself which go on to impairment of vision. All this is readily preventable and is due to a combination of ignorance, indifference and neglect; accentuated by the irritating glare of the sunshine, the prevalence of dust, the menace of flies, the danger of contagion, and the effects of heat. Therefore the largest number of cases of conjunctivitis and inflammation of the eyeball occur in the warm dry season, between June and November.

It is a common mistake to suppose that the damage to sight and injury to the eyes which one sees so frequently at all ages in Palestine is all due to trachoma. Trachoma in itself is not particularly a blinding disease but predisposes to the bacterial infections that inflame the eye. In view of the fact that inflammation of the eye is favored by dirty crowded conditions, neglect and ignorance, it occurs mainly among the lower classes, the more favored portion of the population being as free from eye disease as we are in the United States.

Next to trachoma and ophthalmia, the diseases which deserve attention are cataract and glaucoma. In Palestine, as everywhere else in the world, these two inflictions have a higher incidence among Jews than other peoples. Squint is neglected and often results in impairment of vision. Syphilitic iritis is seldom seen and there is very little gonorrheal ophthalmia. On the other hand, eye complications of tuberculosis and rachitis occur.

Most of the ophthalmic work of the Hadassah has been in the outpatient clinics, which are well attended, ofttimes crowded. There is need of additional dispensary service in the denser portions of the population, and also in the outlying districts. The Hadassah has practically no beds set aside for ophthalmic cases in its hospitals in Palestine.

The Ophthalmic Hospital of the Order of St. John, in Jerusalem, is an admirable institution, skillfully officered, well ordered, and com-

pletely equipped. It has a capacity of 45 beds which are always filled, and an outpatient clinic which sees an average of 600 patients a day. No fee is charged and the doors are open to all. In 1926, it served the needs of 3,046 Jewish patients who had a total of 15,314 treatments.

Trachoma and the Work of the Hadassah.

The signal service rendered by the Hadassah Organization in the prevention and care of trachoma is one of its outstanding achievements and deserves commendable recognition. Similar good work is being accomplished for the Arab school children by the Health Department.

The drive against trachoma began in 1918 in Jerusalem and was started in 1924 in the colonies, where the school children are reached by local doctors and nurses. The ophthalmic service of the Hadassah is now under the able direction of Dr. Heim Yasky. Every child in the Jewish schools, numbering some 23,000 throughout Palestine, is now reached, and all those needing it receive prophylactic treatment daily. The good effects of this splendid service are shown by the fact that in 1918, when the work was begun, 40.7 per cent of all Jewish school children had active trachoma, whereas in 1926, this was reduced to 10.4 per cent.

The point is here made that while trachoma has been reduced, it has not been mastered. The reason for this is that the trachoma nest is in the family, where the disease is contracted. In other words, children do not become infected in school, but rather during the pre-school age at home. It is therefore evident that the trachoma service needs to take into account the younger child and should have a home visiting service to attack the problem at its source and in its beginnings.

For better ophthalmic service Palestine needs more nurses with special training for family visiting; hospital beds for eye cases and local dispensaries for the treatment of infectious eye diseases; and public education on the modes of spread and means of prevention. Trachoma flourishes best where hygienic conditions are worst.

Mental Diseases.

There are two hospitals for the insane in all Palestine. One is a Government hospital at Bethlehem, with a capacity of 60 beds; the other is a private institution, the Ezrath Nashim, in Jerusalem, with a capacity of 74 beds. The need of further facilities for these unfortunates and for the development of a comprehensive program for the prevention of mental diseases and the promotion of mental hygiene is one of the pressing problems. Both the Government hospital at Bethlehem and the Ezrath Nashim in Jerusalem are overfilled, and there is always a waiting list of applicants clamoring for admission. Both institutions become clogged with chronic patients which crowds out the acute cases, which under proper care and treatment are frequently curable.

Most of the cases in these two institutions are dementia praecox or manic depressives. There is only an occasional case of syphilitic psychosis and little or no mental deterioration due to alcohol. We found

that both institutions are well ordered and the patients humanely treated. There were 22 Jews in the Government hospital and 74 in the Ezrath Nashim Hospital, making a total of 96 Jews cared for in these two institutions.

The Ezrath Nashim was founded about thirty years ago by a group of women in Jerusalem and is sponsored by Mrs. Yellin whose work and struggles for this institution excite admiration. At the time of our visit it was in serious financial difficulty.

The Psychoses.

The acute insane need hospital treatment. Chronic cases should be placed upon farms, in asylums, or in homes, depending on circumstances.

It is estimated that Palestine should have 300 beds for its Jewish insane. This is based upon the minimum ratio in the United States, which is two beds in institutions for the insane per 1,000 population, not including epileptics or the feeble-minded. There is probably a higher ratio among Jews on account of a more highly nervous organization and the factors of heredity.

There is an excess of female insane in Palestine, which is accounted for by the fact that there is practically no alcoholic insanity and almost no syphilitic psychoses which afflict men especially. There is comparatively less mental trouble among the Oriental Jews, for the reason perhaps that they are not so susceptible and that they live a more primitive life. There are in all about 25,000 Oriental Jews, mainly Ammonites.

It is of special importance that hospitals for the mentally sick should provide an agreeable environment with a sympathetic understanding. This is particularly true for the acute and curable cases which should not have the barrier of the difficulties of strange language, forbidden diet and other causes of mental irritation. It is therefore clear that the personnel and attendants should be selected with this in view, for the Arab may prefer an Arab, the Christian a Christian, and the Jew a Jew. One proposal to meet the emergency is suggested by the Government: to enlarge the Government hospital at Bethlehem to provide for an additional 300 beds. This would be practical and adequate for the present needs of the country and for some time to come. Another suggestion is to construct a separate hospital for mental diseases with about 50 beds at Tel Aviv, because this is the focus where about one-third of all the Jews in Palestine live.

Minor Psychopathic Cases.

This class of cases is numerous and represents the mild instances of mental disease and mental inferiority. Many of them are border-line cases and they present more a social than a medical question. To this class belong also the morons and the feeble-minded. No figures are available as to their number, but one gets the impression that they are even more numerous in Palestine than in the United States or in England. Very little has been done in Palestine concerning this great problem, which is of serious and fundamental import everywhere.

Venereal Diseases.

It is difficult to obtain anything like satisfactory statistics concerning the ordinary infections which prevail in Palestine, but the difficulties of obtaining reliable figures concerning the venereal diseases there or anywhere are almost insurmountable. There are few facts at hand, therefore, upon which to form a basis, but the impression among physicians is unanimous that there is comparatively little gonorrhea and less syphilis.

One thing is certain, and that is that very little locomotor ataxia, general paralysis and other of the late effects of syphilis are seen either in the hospitals, in the asylums or in private practice. This means either that there is not much syphilis in Palestine or that it exists in mild form.

During our inspection we visited Halhul, an Arab village in the neighborhood of Hebron, because syphilis was reported to be prevalent there. We found that most of the cases in this region were not venereal, but innocent infections contracted by close personal contact, crowding and unhygienic habits.

According to the best information we could obtain, it seems that there is very little gonorrhea among the Arabs, except among the Christian Arabs. There is some among the Jews, more particularly among new immigrants, but there is not much of this disease all told. These are only impressions and figures are wanting.

Measles.

Serious epidemics of measles affected the country in 1923, 1924 and 1925, with an unusually high fatality. In 1923 there were 6,936 cases with 1,232 deaths, giving a case fatality of 17.7 per cent. The outbreak continued the next year, 1924, with little abatement, there being 5,998 cases with 824 deaths, a case fatality rate of 13.7 per cent. The situation gradually improved and measles is on the decline both in severity and general incidence.

Measles in Palestine runs true to type, in that it prevails especially in the colder winter months and the deaths are due to respiratory complications. Measles is a difficult disease to control anywhere and the problem in Palestine is not peculiar. While we can do little to control its incidence, we can do much to lessen its fatality by delaying its age incidence and through the use of convalescent serum, especially for the pre-school child, prevent or modify the disease in the age period when it is most malignant.

Scarlet Fever.

Scarlet fever is not prevalent, and when it does occur, is of the mild type which corresponds to the general experience with this disease in the United States and elsewhere.

Diphtheria.

Last year forty cases of diphtheria with ten deaths were reported to the Department of Health. Jaffa and Jerusalem towns were mainly

affected. In 1924, only twenty-four cases and one death were reported. The climate is not favorable for the spread of diphtheria and with our knowledge of this disease it should not get out of hand.

Smallpox.

No case of smallpox has occurred in Palestine since 1924. There was much smallpox in Egypt in 1925, but Palestine was spared because of the large number of vaccinations done yearly. In 1926, 17,792 primary vaccinations and 77,283 secondary vaccinations were performed. All immigrants are required to be vaccinated before entering the country.

All the vaccine virus used in Palestine is propagated in the Government laboratory by Dr. G. Stuart and distributed freely throughout the length and breadth of the land.

Hookworms and Other Intestinal Worms.

Hookworms.

Hookworm disease is not a sanitary problem in Palestine because of the long dry season and the hard surface of the soil. The hookworm cannot survive these conditions in its free-living stage. There is a focus in Petah Tikvah, although the number of cases is moderate and the infestation light.

Other Intestinal Worms.

Ascaris, or the common roundworm, is the most frequent of the intestinal worms in Palestine, and next to that trichuris, or the whipworm. Oxyuris is seldom found; strongyles exist near Tiberias; and flukes (bilharzia) around Jaffa. The tapeworm, Taenia solium, is frequent; other tapeworms are seldom found. Trichina do not occur as there are few hogs in the country.

Typhus Fever.

This disease is of particular interest on account of its special prevalence among Jews in Palestine. The mild form of the disease which now prevails resembles the kind of typhus fever we have in the United States. There is some question as to whether this form of typhus fever is louse-borne because it prevails especially in the summertime and has a rural distribution.

A total of 304 cases were reported from 1921-1926, inclusive. Of these, 251, or 82.5 per cent, were Jews. Of the total incidence throughout Palestine, 170 of the 304 cases, or 56 per cent occurred in the Jaffa area. Of the cases occurring in this area, 158, or 93 per cent, were Jews. Several theories have been brought forward to explain this remarkable geographic and racial distribution. It should be remembered that about one-third of all the Jews in Palestine live in the Tel-Aviv-Jaffa area, and that many of them have been recent immigrants from regions where the disease prevailed. Both of these facts bear upon the prevalence of typhus.

The control of typhus fever is a problem of personal cleanliness and understanding of its mode of spread, and it is quite sure to diminish spontaneously with improvement in economic conditions.

Malta Fever.

Malta fever is contracted mainly by drinking raw goat's milk. It is a disabling infection quite prevalent in many places about the Mediterranean Basin. Only 13 cases of this disease are known to have occurred in Palestine during the past four years. Many goats are herded and much goat's milk is used in Palestine and the possibilities are evident. Pasteurization is a complete safeguard against contracting this disease through milk. Fortunately, it is the custom to boil much of the milk before it is consumed.

Rabies.

Hydrophobia always excites attention because the disease is almost invariably fatal, but withal preventable. There are many dogs throughout Palestine and this infection is widespread. During the four years 1923-1926, inclusive, there was an official record of 3,899 persons bitten by animals, of which 2,315 were dog bites; cats, jackals, wolves and other animals completing the number.

Since 1919 there have been 46 cases of human rabies in Palestine. In 1923, there were 13 cases and the situation became serious enough to demand active measures. The Government laboratory therefore prepares and issues a carbolized (killed) vaccine, a modified form of the Pasteur prophylactic treatment. This procedure in conjunction with certain local enactments and energetic campaigns against the jackal and the pariah dog, which are the chief vectors in Palestine, have succeeded for the past two years in freeing the country from human cases of rabies.

Tetanus.

Tetanus is always very prevalent in warm countries, and we therefore made a study of its incidence and prevalence in Palestine. It was a pleasant surprise to learn that this preventable wound complication occurs in moderate amount. During our inspection of the hospitals and clinics throughout Palestine we saw no case of tetanus. In the six years 1921-1926, inclusive, there were recorded all told 150 cases, of whom 95 died, making a case fatality rate of 63.3 per cent.

Bilharziasis.

Bilharziasis is an infestation with the worms known as flukes, which are responsible for a group of diseases. There are a number of different kinds of flukes. These parasitic worms cause loss of efficiency, diminished vitality and lowered resistance and sometimes serious disease. The infestation is exceedingly common in warm countries, especially in the Orient and Africa, where in parts more than half the population harbor these parasites. They are also occasionally found in the United States and in other favored countries. Fortunately Pal-

estine has only one small endemic focus of this disease, and that is in the Jaffa area. The worms which cause this disease have a complicated and interesting life history, and pass one phase of their life cycle in a fresh water snail. This particular snail (*Bullinus contorta*) is abundant in the Jaffa area where the disease exists. The menace is well understood by the health authorities and effective preventive measures are taken with successful results. These measures consist of (1) propaganda, instruction in schools, posters, etc.; (2) the use of copper sulphate in wadi beds after the winter rains, and in storage tanks employed for the irrigation of orange groves; (3) the periodic drying of irrigation canals; (4) the emptying and "sweeping" of birkets or tanks in orange gardens as a result of continuous routine inspections by the epidemic medical officer.

Bubonic Plague.

There was an outbreak of this infection in 1922 which centered mainly around Jaffa and Tel Aviv, numbering 63 cases in all. No case has occurred since 1924.

Plague is a disease primarily of rats and secondarily of man. It is not a new disease in Palestine, for an epidemic is described in the Book of Samuel. The possibility that bubonic plague may become endemic and epidemic in Palestine is a serious public health menace. Practically everywhere in the crowded parts of the cities we found evidence of excessive rat population and in many places in the rural sections complaints were made to us of "the mice that marred the land."

Leprosy.

There are about 40 cases of leprosy known to exist in the country. For the most part they receive treatment in the hospital of the Moravian Mission in Jerusalem. At the time of our visit, there were four and later five Jewish lepers in this asylum. A detailed account of this hospital and its admirable work is given in the report.

Pappataci Fever.

Pappataci fever, or three-day fever, is a mild, but disabling febrile disease of comparatively brief duration. It does not kill and leaves no special sequella, except frequently a tedious convalescence. Almost everywhere we went in Palestine we found pappataci fever epidemic. It is transmitted by the sandfly, *Phlebotomus papatassii*. The control of this disease depends entirely upon the further studies to determine the best mode of attack against the insect host. This problem is being worked upon by Professor I. Kligler in the Hebrew University.

Leishmaniasis.

(*Oriental Sore*)

Only the skin form of this disease is found in Palestine. The infection is contracted from the sandfly. Professor S. Adler, of the Hebrew

University, is making a special study of this infection which, in Palestine, is fortunately not a serious health problem nor a disabling disease. Professor Adler and a number of volunteers in the University infected themselves experimentally in order to study the disease in its various phases.

Oriental sore is a sluggish, painless ulcer, usually on the exposed surface of the skin. It persists for months or years, finally healing. It is a local and self-limited form of leishmaniasis. When the sore disappears it leaves an immunity so that a person never has a recurrence. In Persia girls are vaccinated on the buttocks in order to save disfiguring scarring of the face.

The Palestine Department of Health.

The Government health service was first formed under military conditions during the occupation of the enemy territory by the British in December 1917, shortly after their entrance into Jerusalem and Jaffa. It was extended into the districts of Haifa, Nablus and Galilee when occupied in 1918. The testimony is unanimous that no evidence of what may be termed public health service was found at that time.

When Palestine was taken over by Great Britain in accordance with the mandate of the League of Nations, it organized a health department which carries on the usual governmental functions, headed in the main by British personnel.

The Director of Health, Colonel G. W. Heron, is a capable and experienced administrator. We were favorably impressed with the organization and personnel of the Health Department of Palestine. We found an able group carrying on the best traditions based on English practice. All the health officers with whom we came in contact fully realized that more could be accomplished if more money were available. The appropriations for the past few years for the entire work of the Department of Health were as follows:—

		Percentage of Total Budget
1923-1924	£E93,258	5.7
1924-1925	82,423	5.1
1925-1926	84,481	4.3
1926-1927	96,679	3.9

The Zionist Executive in Jerusalem is the recognized Jewish agency for dealing with the government, including the Department of health. The Hadassah Medical Organization, through its Director, maintains cordial cooperation with the Government health authorities. Should the Hadassah become the department of health of the Zionist Executive, the effectiveness of this arrangement could be simplified and improved.

The Director of Health has a deputy director in charge of hospitals and medical section; a senior medical officer in charge of sanitary, epidemic and quarantine section; and an assistant director in charge of laboratory section.

Palestine is divided into four geographic districts, each in charge of a medical officer of health, who in turn has assistant medical officers of health in the various subdivisions. The four districts center around

(1) Jerusalem, (2) Samaria and Galilee, (3) Jaffa, and (4) Haifa. The Department is well organized, the division of territory seems practical, and a foundation is laid for the development of good public health work in the various districts. We found the health officials uniformly courteous and capable, and there is no doubt in our minds about their ability to carry on good public health work.

While the general Palestinian annual Government budget has tripled since 1922 (£E881,000 in 1922 to £E524,000 in 1926), the health budget has decreased from a percentage of 7.6 of the total money expended by the Government in 1921-1922, to 3.9 of the total money expended in 1926-1927. Five times as much is being spent for police protection as for health. The report of the Department of Health for 1925 pleads inadequate funds as the reason for failure to expand. At the same time there is noted a surplus in the general treasury for the year of almost $2,000,000. It may be inferred that those entrusted with the responsibility of promoting health and preventing disease have failed to plead their cause so that some of this surplus might have been applied for the conservation of health and the saving of lives. We recommend that a larger proportion of Palestine's budget be allotted for much needed health work.

It is our belief that certain phases of health work are clearly governmental functions, such as the hospitals for the care and isolation of contagious diseases, asylums for the insane, medical inspection of school children, maternity and infant welfare, antituberculosis work, etc. Money is needed to increase the personnel and strengthen the resources of the Department of Health. We believe the present Department is undermanned but organized so as to develop and carry on an excellent health program if given sufficient means. Municipalities also which are able financially to carry on health work should be influenced to do so. Palestine is sorely in need of extending its program of health education as well as augmenting its health service with an aggressive program of prevention. This needs stimulation by leadership and initiative of its public health organizations. Before the ideals in this direction can be realized, it is quite clear to us that Palestine needs help, but the Government should accept its share of the burden and do its share of the work.

Information from various sources called to our attention the fact that early in the present Jewish colonization movement, the Government was assured that the Zionist Executive would take care of and finance its own health program. This, we believe, has retarded in the past the development by the Government of health work for the Jewish population.

The Director of Health and his deputies are able and efficient. The country is well laid out in its division of health districts. The organization with the addition of Jewish personnel in the Jewish colonies should be able to carry on good public health service. The recent employment by the Department of Health of sanitary inspectors to cover some of the Jewish colonies is a commendable step which should be appreciated by the Jewish community.

More emphasis should be placed upon the sanitation of the environment, with the Department of Health carrying out its responsibility in

this field. The Town Planning Ordinance should be encouraged so that the sanitary code might be enforceable.

The Governmental and municipal health services should be encouraged in the organization and administration of prenatal and infant welfare service as well as in the formulation of a school health program for all groups of the Palestinian population.

The Government should provide adequate facilities for the care of infectious diseases, a problem at the present time in Palestine, and at the same time should be mindful of the fact that improved sanitation and health education in the prevention of the spread of infectious disease will modify eventually the extent of hospital needs for infectious cases.

The Government should provide more adequate facilities for the care of the insane, since the present bed strength is far too little.

The Department of Health is entitled to the backing and support of the community. Without support there is no encouragement for increased effort. The ability to do good work exists in the organization. Good work is being done in varied fields. Increased responsibilities and enlarged programs are bound to follow.

Maternity and Pre-school Child Hygiene.

Palestine has an infant mortality of 188.64 per 1,000 births, and the Government report points out the fact that the maternal mortality is also undoubtedly very high. These few words give an impressive picture of incomplete and insufficient prenatal and infant welfare service. This may be contrasted with the splendid maternal and infant welfare work carried on by the Hadassah, resulting in a progressive reduction of infant mortality among the Jewish and Arab peoples following the services of the Hadassah.

School Medical Service.

In 1925, there were 315 Government schools in Palestine, with a school population of about 20,000. There were 489 non-governmental schools with a school population of about 45,000. The Jewish school population in Palestine was 26,481. The responsibility for the medical service in the so-called non-governmental schools, among which the Jewish schools are listed, is in almost every instance left to volunteer organizations. The Hadassah carries on medical inspection for about 23,000 Jewish school children.

The Government employs school physicians and school nurses with their usual duties. The children are given a medical examination and the sanitation of the school buildings is looked after. The children are vaccinated and the usual methods for the control of communicable diseases are practiced.

This service is well done so far as it goes, but we can see no reason why it cannot be extended to include the Jewish children in the Jewish schools. This is discussed under the work of the Hadassah Medical Organization.

Government Hospitals and Dispensaries.

For a few years after the British occupation of Palestine, the great need for medical relief, a direct result of the war conditions, necessitated the opening of sixteen Governmental hospitals. The reopening of the volunteer hospitals closed during the war caused the Government to reduce their number as follows:

	Government Hospitals	*Beds*
1922	12	387
1923	11	375
1924	7	228
1925	4	155

At the beginning of 1925 there were only four hospitals entirely supported by the Government, although they were still taking a part in the maintenance of four other hospitals. As a number of the hospitals taken over originally by the Government were municipal institutions before the war, it has been the policy of the Department of Health to return these hospitals to the municipalities, although remaining subject to governmental regulations for the maintenance of standards.

According to the best data available, there are thirty-nine hospitals in Palestine, eight of which are Government and municipal, and thirty-one private. The following figures are significant: The Government and municipal bed strength is only about 15 per cent of the total; of the number of patients admitted to hospitals in 1925, 10,776 were treated in Jewish hospitals, against 12,630 in non-Jewish hospitals; of the number of patients admitted to Government and municipal hospitals, 3,944 were non-Jewish, against 498 Jews. It is plain, then, that the Government has committed itself to a policy of decentralization, whereby the burden for the maintenance of hospitals shall be borne by the various municipalities and communities. Nevertheless, it acknowledges its responsibility for the maintenance of fever hospitals for the care and isolation of infectious diseases.

A further study reveals the fact that about 11 per cent of the patients treated in the Government and municipal hospitals were Jews. In the city of Jerusalem, where the Jewish people constitute 60 per cent of the population, only 9 per cent of the 1,200 patients receiving treatment in Government municipal hospitals in 1925 were Jewish. The reluctance of the Jews to accept treatment in Government and municipal hospitals is largely due to the fact that the physicians, nurses and attendants employed in these institutions are non-Jewish. We recommend an adjustment of the staff based upon the type and percentage of the population living in the community where a hospital is situated. It is significant to note that there are no Government hospitals in Jewish communities outside of Jerusalem. Furthermore, there are no Government dispensaries in Jewish towns and villages. We believe it is the duty of the Government to equalize its services, furnishing an amount proportionate to about 17 per cent of the population of Palestine, this constituting the Jewish population.

The Hadassah and Kupat Cholim between them care for about 40 per cent of the bed patients of all hospitals in Palestine

The Italian, German, English and other mission hospitals are located in Jerusalem. The historic and sacred reaction in favor of the Holy City were naturally responsible for placing these institutions there. They are doing excellent work. Some of them have empty beds, while others are overcrowded. While Jerusalem is almost over-hospitalized, other sections of Palestine have an insufficient number of hospital beds, and this unequal distribution is responsible for much hardship. The Hadassah, as the largest voluntary medical organization, maintains a series of hospitals and dispensaries, and the Kupat Cholim also provides outpatient and hospital care for its beneficiaries. Both of these organizations operate particularly in sections where the Jewish population is concentrated and where there is dire need of this service.

Mental Diseases and the Care of the Insane.

There is only one Government hospital for the care of the insane in all Palestine: this is at Bethlehem. There is only one private hospital, the Ezrath Nashim, in Jerusalem. There is need of further facilities for these unfortunates and for the development of a comprehensive program for the prevention of mental diseases and the promotion of mental hygiene.

The care of the indigent insane is clearly a governmental function and an obligation of the Palestinian Government. Palestine, furthermore, should have outpatient clinics and social service work for the needs of its mentally defective and mentally diseased. It could make good use of a preventorium. It needs a course of instruction for nurses in mental hygiene. No provision is now made for the prevention of these conditions nor any effort to think in terms of mental hygiene. We trust that the Hebrew University may find means to institute a psychological laboratory for research where tests and studies could be developed.

Foodshops and Unhealthy Trades.

Inspections are made by representatives of the Medical Officer of the Department of Health before new licenses are issued, and the conditions studied are: premises, construction, sanitation, general conduct of the trade, etc. Among those industries which fall within the province of this regulation are: public baths, aerated water factories, sugar refineries, soap making, preservation of fish and meat, sugar making, slaughter houses, ice factories, public markets, hotels and lodging houses, restaurants, bars and cook shops, dairies, confectioners, fish shops, ice cream shops, poultry shops, distilleries and breweries, and any other establishment, trade or store house of products which may be detrimental to public health.

Slaughterhouses.

Rules and regulations have been drafted for the purpose of controlling the slaughtering of animals used for food. Under the diseases of animal ordinances enacted in 1926, every municipality or local council shall provide public slaughter houses, constructed and equipped in

accordance with plans and specifications, receiving the approval of the Director of the Department of Health and the chief veterinary officer. Veterinary surgeons or meat inspectors working under the supervision of veterinary surgeons examine the animals slaughtered and pass or reject them. In the slaughterhouse which we visited, we found a dual inspection, for in addition to the one by the Government official, the animals were slaughtered and inspected in accordance with the Jewish technic that would satisfy the kosher requirements.

The Practice of Medicine, Pharmacy, Dentistry and Midwifery.

There are approximately 600 licensed physicians practicing medicine in Palestine. There are over 400 Jewish physicians, which is in the ratio of 1 to every 400 Jews in the land. In other words, there is a surplus of medical service available.

Irregular practice is brought before the courts and unlicensed practice is not permitted. Rules and regulations are also enforced to govern the practice of pharmacy and dentistry.

Midwives are registered and granted a certificate. Over 1,300 women are registered as midwives, very few of whom are said to be able to read and write.

Nursing.

The first regulation for the training of nurses in Palestine was issued in 1919, since which time over 100 have completed their training and passed examinations for nurses' certificates. Nursing training in Palestine is according to two systems, British and American. The former is followed in the Government, municipal and British Mission Hospital; the latter, in the nurses training school of the Hadassah Medical Organization. Each training school issues its own graduation certificate which is endorsed by the Director of Health.

Laboratory.

The Department of Health maintains a central laboratory in Jerusalem presided over by Dr. G. Stuart, who is Director of the Laboratory Section, with an adequate staff. We found this an admirably conducted department, ably presided over and meeting a real need. Here vaccines, such as typhoid vaccines, are prepared, the prophylactic material to prevent rabies is made, and vaccine virus is propagated. All the ordinary laboratory examinations to aid in the diagnosis of disease are made. To indicate the volume of this work done, there were 17,765 bacteriological specimens examined and reported on during 1925 in this laboratory. Examinations are also made of water and milk, drugs and disinfectants, and foods, etc.

The Hadassah also conducts a laboratory with free service for diagnosis.

Medico-Legal Examinations.

The Government Department of Health is also active in medico-legal examinations. Over 5,000 such examinations were made at the request of the police in 1925.

Prison Medical Service.

The medical care of prisoners is also under the charge of the Health Department. There are two central prisons, one at Acre and one at Jerusalem, containing about 730 prisoners; as well as two jail labor camps with 450 prisoners. In addition, there are a number of small lockups, containing about 25 juvenile prisoners. Tuberculosis is a serious problem in the prisons.

Control of Dangerous Drugs.

In order to bring the local law into conformity with the Geneva International Opium Convention, an ordinance was passed on July 15, 1925, for the control of the cultivation, importation, exportation and possession of certain dangerous drugs.

Isolation Hospitals, Immigration and Quarantine.

These activities are discussed separately.

Isolation Hospitals.

At the time of our inspection, the Government had beds in its own hospitals in only four cities, Jerusalem, Haifa, Jaffa and Nablus. At Haifa there is a separate building, but the other cities have an annex extension.

Provision for hospitalization of cases of contagious disease is sadly deficient, especially for the Jewish population. During the past few years the hospitals have been filled with typhoid and dysentery, leaving insufficient room for the usual run of other diseases.

Money has been allotted by the Government and plans prepared for better facilities for fever hospitals, and it is expected that the buildings will be ready for the 1928 season. Both the need for and the duty of the Government in providing sufficient accommodations to care for and isolate its contagious cases are too clear to need emphasis.

Immigration Stations.

There are two immigration stations in Palestine: one at Haifa, and the other at Jaffa, both under the Zionist Executive. These stations are used to house arriving immigrants for a few days or until they find a place or opportunity to work. The medical service is furnished by Hadassah. All immigrants are given two injections of typhoid prophylactic and are also vaccinated against smallpox.

At the time of our inspection, the station at Haifa was closed on account of the falling off in immigration. In the Jaffa station there were 28 immigrants from Russia. Both these stations are well equipped, clean, and serve a useful purpose. This is, in fact, an admirable contribution to immigrant aid work and would be useful in any country for any people, in order to prevent the exploitation of persons who find themselves in a strange situation, often producing mental stress corresponding to a climax in their lives.

Maritime Quarantine Stations.

The Government of Palestine has established two maritime quarantine disinfecting stations to guard against the introduction of exotic pestilence. One is at Haifa, the other at Jaffa. These stations are Government institutions under the Health Department. Both of them are well conducted, adequately equipped and efficiently administered.

In 1925, 3,466 vessels were visited for health inspections, resulting in the temporary detaining of 6,768 persons. During the same year, 48,494 embarking persons were examined, and 31,467 immigrants were not only examined but were vaccinated against typhoid and smallpox. Owing to the restriction of immigration the work of these stations has fallen off correspondingly.

Quarantine.

Quarantine posts are established at Kantara, Gaza, Acre, Ras El Nakura on the Syrian border, and Semakh on the Damascus line; as well as the two maritime quarantine stations already noted at Haifa and Jaffa. The quarantine stations are in charge of the Government health officer of the district. Quarantine practice follows the recommendations of the International Sanitary Convention of the League of Nations.

When the railroad to Arabia is finished, many Moslem pilgrims will pass through Palestine, and this will add a problem to protect the country against infection, especially cholera.

The Voluntary Medical Agencies.

The Hadassah Medical Organization.

The Hadassah Medical Organization started its work in Palestine in August, 1918, as the American Zionist Medical Unit. Its work has grown, broadened and developed to a service of vast magnitude for the Jewish people of Palestine, and at the same time the quality of that service has constantly risen. Its main efforts are concentrated upon curative medicine, although it has given regard to prevention. It has established hospitals at Jerusalem, Tel Aviv, Haifa and Safed and will soon operate one at Tiberias. In 1926, 10,041 patients were treated in these hospitals. The outpatient service in connection with them treated 16,230 new patients during the same year. In addition to this, Hadassah has organized a rural health service in many of the colonies and outlying places. During 1926, 36,065 new patients and a total of 602,485 visits were made to the various rural dispensaries, making a grand total for its various outpatient departments of 110,000 patients, who made over 600,000 visits. These figures are given in order to have a picture of the size of this service.

In addition, Hadassah conducts a child welfare department, several milk kitchens, a system of home visits by nurses, and looks after the medical and hygienic care of some 23,000 Jewish school children. Over 37,000 home visits were made by nurses in 1926, and 100,000 laboratory examinations were conducted; also 3,000 babies and ex-

pectant mothers were carefully supervised in the prenatal and infant welfare clinics. Hadassah has done a notable piece of work in diminishing the amount of trachoma, and furthermore assists in the medical care of immigrants. It provides facilities for the education of physicians on its own staff as well as others, conducts a school of nursing, and cooperates in various ways with other health and welfare organizations, particularly the Department of Health, the Kupat Cholim and the Hebrew University. To cover the broad field of its many activities, Hadassah spent during the year 1926, over £E132,032, or approximately $660,000. This catalog of facts is listed to give credit to Hadassah for the wide field and broad scope of its beneficent activities.

This admirable service has been achieved under the inspiration and noble guidance of Miss Henrietta Szold. Hadassah is a monument to her zeal, faith, vision and self-sacrifice.

In view of the fact that Hadassah is the chief philanthropic agency to look after the health work of the Jewish people in Palestine, we made a special study of its activities, its budget, its program, its personnel and its policies. We also studied and report upon its achievements, its short-comings and its relationships. We have done this in some detail because the subject deserves our best thought, particularly with reference to the future. Hadassah has served a useful purpose during a very difficult period, is doing good work in the present stage of transition, and is alive to the possibilities of serving its purpose still better in the future.

The Relationship of Hadassah to the Community.

Hadassah occupies a position analogous to leading volunteer health agencies in many of our American cities. There is this fundamental difference, however, that most of its financial support and control comes from without. A volunteer health organization serves its best ends when it is a communal effort and thus becomes part of the community consciousness. Hadassah is therefore in a peculiar and sensitive position, in that it must be very careful to adopt a policy of being the volunteer health organization *of* Palestine, not *for* Palestine. The only way in which this relationship can achieve its highest rewards is to gradually work so that it will largely in fact be financed and controlled by Palestine itself. This will take time but should be the clear-cut policy of the organization.

In the United States similar organizations adopt the policy of putting themselves out of business. This is done by doing their work so well that they prove their usefulness to the community, which then takes them over as governmental functions. This cannot be expected so quickly in Palestine where economic conditions postpone the possibility of the community supporting at an early date all of its much needed health work. It is clear, however, that the inheritance of this health work should be Palestine's governmental responsibility. The justice of this is apparent, particularly in view of the fact that the Government already furnishes almost all the health work that is done for the Arab population.

With these points in view, we consider that the time is now ripe to

consider the transfer of the following obligations to the Government, namely: (a) prenatal and infant welfare service; (b) school medical service; (c) hospitals for infectious diseases (fever hospitals). This we recommend.

(a) *Prenatal and infant welfare service.*—Experience has shown that no branch of the great field of preventive medicine offers more immediate and rewardful results than here. It is comparatively easy to prevent sickness and deaths among babies by methods that have been well tried in many parts of the world with good results. The burden and hazard of motherhood may be eased and the success of parturition assured through prenatal care. In view of the fact that the maternal and infant mortality rates are excessive among the Arabs and high among the Jews, this is an inviting field for a convincing demonstration. We do not believe that it is at present practical and therefore do not recommend an immediate transfer of the excellent work conducted by the Hadassah until the Government is conscious of its responsibilty in this field, and organizes clinics to replace those of the Hadassah. Transfers of this sort were slow with us and are still going on; in fact, we still find it necessary in most of our American cities to supplement Government activities in prenatal and infant welfare service by volunteer organizations. The transfer in Palestine will be slow and necessarily deliberate, but everything possible should be done to create sentiment in the direction of increased governmental activity in the field of preventive medicine. As the Government provides this service, the Hadassah could withdraw from the field. In this way the transfer would be gradual and go step by step with the economic possibilities and the education of the community. When the transfer is made in this way, it will be so deep rooted that the community will nourish and support it.

(b) *School medical service.*—The Hadassah is carrying on an excellent school health service for the Jewish school population. The Government is conducting a similar service for the Arab school population in the Government schools. We see no reason why the Department of Health should not furnish school medical inspection for the Hebrew children, and we recommend that every effort should be made to impress the authorities with the justice and importance of this proposal. The Government might very well pay the Hadassah for services rendered, or organize a personnel of Jewish physicians and nurses to carry on this work.

(c) *Hospitals for infectious diseases.*—A large volume of important work is carried on in the Hadassah hospitals. It relieves the Government of the burden of caring for a great number of its indigent sick. We found that many of the beds of the Hadassah hospitals are occupied by patients suffering from infectious and contagious diseases. Throughout the United States and Great Britain, it is accepted as a fundamental policy that the care and isolation of such cases is a community responsibility. One of the most important links in the chain of prevention of many communicable infections is isolation in special hospitals where skilled nursing and preventive measures are understood and applied. The Palestinian Government is aware of its responsibility

in this regard and of the needs of the situation. It has plans for the building of fever hospitals at strategic points. Meanwhile, however, the Government should reimburse the Hadassah Organization for the cost of such services.

While isolation hospitals are much needed in Palestine, the policy should be to emphasize the preventive side so as to keep the people out of the hospital. The typhoid epidemic during the past few years caused an emergency which was quite evident during our visit. So many of the beds were occupied by this preventable disease that the ordinary run of cases were crowded out. This phase is discussed more in detail under the control of typhoid fever, dysentery and infectious diarrheas which are prevalent in Palestine.

Full-Time and Part-Time Service—Improving Medical Standards and Education in Palestine.

We commend the scheme of full-time service for the department heads and certain other employees in the Hadassah Organization. This plan attracts men of the best type of skill and spirit of service. Furthermore, it has the advantage that they are made free of worry and able to give their best efforts to their duties, to the hospital, to research and perhaps to teaching at the Hebrew University. We believe also that some of the assistants and a fair number of the remaining personnel within the limits of the apropriation should likewise be on full-time service. On the other hand, we are convinced that much of the work of the Hadassah could be done to advantage by personnel who are largely part-time or free. We are now thinking in terms not only of advancing the purpose of the work of the Hadassah, but improving the position and standards of the medical profession of Palestine. In order to do this, it is important that a larger number of the local medical profession should have hospital connections by which they may obtain experience which will raise to a higher level the Jewish medical profession of the country. It is not necessary here to go into the details by which such a program may be carried out. We recommend that the plan be tried out carefully and consistent with the economic situation.

It is here pertinent to state that the rural medical officers of the Hadassah should be trained and interested in the sanitary aspects of their districts and encouraged to do preventive work.

Hadassah and Its Relationship to the Zionist Executive.

We recommend unqualifiedly that the Hadassah Medical Organization should be the department of health of the Zionist Executive in fact as well as in name. The director of the Hadassah should continue to conduct and direct the program of the Hadassah medical service in Palestine. He should be appointed as heretofore by the Hadassah Women's Zionist Organization, perhaps in cooperation with the Zionist Executive. The director should have an advisory committee composed of the best brains and the leaders of the health and welfare forces in Palestine. The primary duty of such an advisory

committee would be to support, guide and help the director in the wise administration of the Hadassah program. One of its chief functions would be to protect the policies and work of the Hadassah from political meddling by any individual or group. The advisory committee should be small in number and carefully selected. It should be a committee for advice, for review, for confirmation, for appeal, for guidance and for support, but it should have no executive functions whatever.

Much of the Palestinian population, the medical profession, those charged with the welfare of Palestine, and others will not be content until a useful and close alliance is completed between Hadassah and the Zionist Executive. Such cooperation will promote economy, efficiency and harmony. We recommend it whole-heartedly.

Economy of Administration.

The forementioned recommendations have been made with an eye to economy as well as efficiency. The transfer of some of the medical activities of Hadassah to the Government, as well as the readjustment of its medical service, would of course help to conserve the budget. We recommend to the Director the possibility of reducing the nursing personnel, employees in kitchen, housekeeping, laundry and other hospital departments. In making this recommendation we are mindful of local conditions, under which may be grouped labor, climate, physical handicaps of poor buildings for efficient hospital administration, and other factors that increase the amount of help necessary to carry on good hospital work. In our report we offer comparative figures with American Institutions and the back-ground of European and Palestinian hospitals. In making this recommendation, we desire to commend the ideals of the Director for the many steps which he has taken to maintain the standards of the Hadassah hospitals upon a high level.

Needs.

Nothing in the above statements concerning the transfer of Hadassah operations to the Government or other economies that would conserve the budget should be interpreted as meaning that the Hadassah could get along with less. It needs and should have more instead of less even if our recommendations are carried out. Money is needed to improve and expand the hospital and clinic work, to drive home and complete the prevention of trachoma, to provide for public health nursing and home visitation; also for public health education, for better service in the care, prevention and control of eye diseases, and for the acute needs with reference to the insane, mental defectives and the promotion of mental hygiene. With more funds much needed work could be done to lower infant mortality and promote child welfare. Furthermore, there is the ever present need of public health education in the art of hygienic living. With more resources at hand more effective work could be done along the lines of preventing typhoid, tuberculosis and many other avoidable infections. Finally, there is the fundamental need of finding and supporting native genius to learn

new truths through scientific research. If sufficient means were at command, much more beneficent work for the health and welfare of our people in Palestine could be accomplished by the Hadassah Medical Organization, which deserves generous support.

The Kupat Cholim.

The Kupat Cholim has been a strikingly successful enterprise, rapidly growing in a few years from an organization of a few members to one of over 15,000, expending in 1926 £E55,000, almost one-third of which was provided by the Palestine Zionist Executive, and about two-thirds collected in monthly fees from its own members. The Kupat Cholim has organized and is now carrying on widespread medical service through numerous outpatient clinics located both in the cities and colonies in many parts of Palestine, where it meets the needs particularly of the agricultural and industrial parts of the population. It has in recent years started several small hospitals, one of which—at Ain Herod—was operating actively during our visit. The organization is planning to construct a large hospital at Afule to serve the Emek.

The Kupat Cholim was primarily intended, as its name signifies, to be a sick fund (krankencasse), but it has increasingly expanded its medical program. While it may have appeared necessary in the past for this organization to provide hospital and medical care for its sick beneficiaries, we believe that this work should be coordinated with the Hadassah under the proposed recommendation whereby the Hadassah would become the department of health of the Zionist Executive. It seems clear to us that this would be the very best arrangement for the community. Such a reorganization would have in mind representation of the Kupat Cholim on the Hadassah Advisory Committee.

A consolidation could be effected which would prevent the loss of identity of the Kupat Cholim, for this organization is based upon the sound principle of self help and self government. To our thinking, the details of the plan of consolidation are less important than the spirit of cooperation necessary to make it successful.

The Vaad Habriuth.

The Vaad Habriuth, or Health Council, was organized as an advisory board to the Zionist Executive and interested itself in many of the important public health problems of Palestine. This Council was defined as the highest medical authority and was intended to act as a representative body of Jewish medical work in Palestine. It had the ideal hope of coordinating the activities of all existing medical and public health institutions. Its effort at correlation was indeed commendable, but we do not believe successful in this particular field.

If the Hadassah is constituted the department of health of the Zionist Executive in fact as well as in name, there would be no need of the Vaad Habriuth functioning in any similar capacity.

The Council showed commendable activity, and while it was responsible for some studies and able contributions, it found itself handicapped by antagonistic elements which it was unable to bring into harmony.

The Shaare-Zedek and Bikur Cholim Hospitals.

These institutions have operated under financial difficulties. They have been obliged to go out and solicit funds in Germany and America for maintenance. Both institutions have unoccupied beds; the Hadassah beds are overcrowded. The outpatient departments of both these institutions have much idle room on clinic days; the Hadassah patients wait out in the yards in the broiling sun. It would be ideal if these two hospitals could be joined to the Rothschild Hospital in some form of organization so that the bed and outpatient facilities might be distributed and utilized for the best interests of the community. This recommendation will probably not be appealing to the governing heads of the Shaare-Zedek and Bikur Cholim institutions, but cooperation is the watchword of the day, even though it entails personal sacrifice.

Something should be done to bring together the three chief Jewish hospitals in Jerusalem which are working ostensibly for the benefit of the Jewish population. Any workable scheme will succeed if the best spirit of service actuates those in control of this situation. We believe coordination could be accomplished without sinking the identity of the institutions. If these three hospitals were to work together as a single unit, it would entirely do away with the necessity for many years to come of the great expense of building larger hospital and outpatient accommodations for the Hadassah Rothschild Hospital in Jerusalem.

The Misgab Ladach Hospital.

The Misgab Ladach Hospital is an old saphardic institution, located within a crowded section of the walled city of Jerusalem. It has a bed strength of thirty-four, mainly for maternity and gynecology. At the time of our visit only twelve beds were occupied.

As a hospital this institution is inadequate, meagerly equipped, and the building quite old but is kept clean and orderly.

The Mission Hospitals.

We visited and inspected the *English Mission Hospital,* which is supported by the Jews Society of London, and is under the capable direction of Dr. R. J. Orr-Ewing; the *German Hospital,* an Evangelical Deaconesses institution, of which Dr. Canaan is chief physician; the *Italian Hospital,* a comparatively new building of stone, attractive and well ordered, which receives a subvention from the Italian Government; the *Ophthalmic Hospital,* supported by the Order of St. John, which does admirable work in the treatment of trachoma and other diseases of the eyes; the *Leper Home,* maintained by the International Moravian Church, which is the only institution of its kind in Palestine, Syria and Transjordania; and the *French Hospital,* which contains many admirable features.

All the above hospitals are situated in Jerusalem and are open to Moslem, Christian and Jew alike, and some of them, such as the English Mission Hospital, cater particularly to the Jewish population We found all of them doing good medical work.

These hospitals, as well as other institutions, are treated in detail in the body of the report.

The Hebrew University and Research Opportunities.

We were profoundly impressed with the Hebrew University. It is superbly located and, despite its youth, has already made distinguished contributions. It is fortunate in being under the guidance of its Chancellor, Dr. J. L. Magnes. Its standards, its ideals and its destiny are assured. Here we found patient, self-sacrificing scientists laboring in laboratories modestly removed from the glare of the limelight, working out fundamental problems in the broad fields of human endeavor; those of bacteriology, parasitology, hygiene and preventive medicine being particularly pertinent to our survey. An admirable start has been made, and much more work could be accomplished if the means and facilities were provided. We are thoroughly convinced that this institution offers one of the most hopeful prospects for advancing Jewish happiness and security the world over. Here is a temple for scholarship with opportunity for scientific revelations, and on account of its location and spirit, an encouragement for the expression of Jewish genius.

Our attention was called to the fact that there is a desire for friendly cooperation between Hadassah and the Hebrew University. We are thoroughly in sympathy with this and recommend it heartily. It would be of mutual benefit, if, for example, the services of certain professors in the University could be drafted to help, guide and even direct the work in their special fields in the Hadassah. On the other hand, the capable heads of divisions in the Hadassah could receive professorial appointments in the University so as to give them opportunities for research and teaching. The result would be to raise standards, increase opportunities and be another instance of consolidation and cooperation which are so much needed in Palestine.

Research work is also carried on in the Government laboratories of the Department of Health and to a lesser extent in some of the smaller hospital laboratories. It would be admirable and advantageous if these facilities could be extended.

L'Envoi.

We have tried to be fair and frank. We visited Palestine without preconceived notions. We tried to see the realities in a detached and impersonal attitude. We were inspired with the opportunity to visit and serve the Canaan of our fathers, the Palestine of today; and have ever been mindful of our responsibility. We viewed conditions with a critical eye but with a sympathetic attitude. While pointing out faults, shortcomings and failures, we do so with the hope of offering helpful and constructive remedies. It was with a sense of deep humility that we stood in the holy places of the Holy Land and thought of the great traditions which have become our heritage, but especially of the teachings of Moses who was the first great sanitarian.

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